

#45

SEQUENCE LISTING



Schupp, Thomas
Toupet, Christine
Engel, Nathalie

<120> Rifamycin biosynthesis gene cluster

<130> 4-21001/B/C1

<140> 10/042,665

<141> 2002-01-09

<150> 09/242,744

<151> 1999-03-24

<150> PCT/EP97/04495

<151> 1997-08-18

<160> 9

<170> PatentIn Ver. 2.1

<210> 1

<211> 5676

<212> DNA

<213> Amcylatopsis mediterranei

<400> 1

ggtacccgggt gttcgcgacg gcgttcgacg aggcttcgaa gcagactggac gtctgtctgg 60
 ccggccgtgc cgggcaccgc gtgcgggacg tcgtgtcgg cgaagtgcgc gcccggaaaccg 120
 ggctgctgaa ccagacggtc ttccacccaag cccggctgtt cgccgtggag agcgcgttgt 180
 tccggctcgc cgaatctgg ggtgtccggc cggacgttgt gctcggccac tccatcgaaa 240
 agatcaccgc cgcgtatgcc gcggggcgtct tctcgtcggc ggacgcgcgc cggatcgctg 300
 cggcgccggc cgggctgtatc caggcgctgg cggccggccgg ggcgatggtc gccgtcgccg 360
 cctccgaagc cgagggtggcc gaactgtctg ggcacggcgt ggaactcgcc gccgtcaacg 420
 gcccttcggc ggtagtcctt tccggggacg cggacgcgtt cgtcgcggc gccggccgca 480
 tgcgcgagcg cgggcacaag accaaggcgc tcaaggtttgc acgcgttgc cactccgcgc 540
 ggatggcgcc gatgctggcg gagttcgccg cccgagctggc cggcgtgacg tggcgcgagc 600
 cggagatccc ggtggcttcc aacgtgaccc gccgggttcgc cgagccccggc gaactgaccc 660
 agccgggcta ctggggcggag cacgtgcggc ggccgggtgcg gttcggccgag ggcgtcgccg 720
 cccgcacggc gtccggccgc tcgtgttgc tggagctcg gccggggggcg ggcgtgaccg 780
 ccctcgatcgaa ggagacggcc gaggtcacct gcgtcgccgc cctcgccggac gaccggccgg 840
 aggtcaccgc gctgatcacc cgggtcgccg agctgttgcg cccgggggtt ggcgtcgatt 900
 ggcggccct gctgcccggc gtccacgggt tcgtcgaccc gccgaagtac gccttcgacc 960
 agcagcacta ttggctgcag cccgcgcgcg aggccacggc cgcggcctcg ctcgggcagg 1020
 tcgcggccgc ccacccgcgt ctggggcggc tggtccggct gccgcagtcg gacggcctgg 1080
 tcttcacccctc gccgtgtca ttgaaatcgc acccggtggc ggcggaccac gtcacatcgcc 1140
 ggggtgggtct cgtcgccggc accgggtctcg tcgagctggc cgtccggggc ggggacgagg 1200
 ccggctgccc ggtccctcgaa gaactcgatca tcgagacttc gctggctgtc cccgaccacg 1260
 gcgggggtccg gatccagggtc gtcgtggggc caccggggga gaccgggtcg cgcgcgggtcg 1320
 aggtgtactc cctgcgcgcg gacgcgggtgt ccgaagtgtg ggcggccgcac gccaccgggt 1380
 tcctggctgc gacgcgtcg cagcacaacgc cgttcgactt caccgcctgg cgcggccccc 1440
 gcgtcgagcg cgtcgacgtc gaggacttct acgacggctt cgtcgaccgc gggtaacgcct 1500
 acggggccgtc gttccggggc ctgcggggcg tggggcggc cggcgcacgaa gtgtcgccg 1560
 aggtcgccct ggcggaggac gaccgcgcgg acgcggcccg gttcggcatc caccggcc 1620
 tgctggacgc cgcctcgac gccggcatgg ccgggtccac caccacggaa gagccggcc 1680
 ggcgggtct gccgttcgc tgaaacggcc tgggtctgcg cgcggccggg ggcgtccgcgc 1740
 tcgcgggtccg gctcgccccc acgggtccgg acgcctcgac gtcgaggcc gggacgagg 1800
 cccggcgtct cgttgacg gccgactcg tggtctcccg gccgggtgtcg gccgaacagc 1860
 tggggcggcgc ggcgaaccac gacgcgttgc tccgcgtgaa gtggaccgag atttcctcg 1920

ctggagacgt	tccggcggac	cacgtcgaaag	tgctcgaaagc	cgtcggcgag	gatcccctgg	1980
aactgaccgg	ccgggtcctg	gaggccgtgc	agacctggct	cgccgacgcga	gccgacgacg	2040
ctcgcttgt	cgtggtgacc	cgccggcgccg	tccacgaggt	gactgaccgg	gccggtgccg	2100
cggtgtgggg	cctgatccgg	gcccgcgcagg	cggaaaaccc	ggacccgatc	gtgctgctgg	2160
acaccgacgg	tgaagtcccg	ctaggccggg	tgctggccac	cggcgagccc	caaacagccg	2220
tccgaggcgc	cacgctttc	gccccgcggc	tggcccgcgc	cgaggccgcg	gaggcaccgg	2280
cagtgaccgg	cgggacggtc	ctgatctcg	gcccggctc	getgggcgcg	ctcaccgccc	2340
ggcacctggt	cgcccgacac	ggagtccggc	ggctgggtct	cgtcagccgc	cgtggccccc	2400
acgcccacgg	catggccgaa	ctgaccgctg	aactcatcgc	tcagggcgcc	gaggtcgccg	2460
tagtcgctt	cgacctggcc	gaccgggacc	aggtccgggt	actgctggcc	gagcaccggc	2520
cgaacgcgt	cgtcacacg	gcccgttgc	tcgacgacgg	cgtcttcgag	tcgctgacgc	2580
gggagcggct	ggccaagggtc	ttcgcgccc	aagttactgc	tgccaatcac	ctcgacgagc	2640
tgacccgcga	actggatctt	cgcgcgttc	tcgtgttctc	ctccgcctcc	ggggttctcg	2700
gctccgcgg	gcagggcaac	tacgcccgt	ccaacgccta	cctggacgccc	gtggtcgcca	2760
accgcggggc	cgcgggctg	cccgccacat	cgctggctg	gggcctgtgg	gaacagaccc	2820
acggatgac	cgcgcaccc	ggcgcacgcg	accaggcg	ggcgagtcgc	ggcgggttcc	2880
tcgccatctc	acccgcgaa	ggcatggagc	tgttcgacgc	agcgcggac	gggctcgctg	2940
tcccggtaa	gctggacctg	cgcaagaccc	gcccggcg	gacgggtgccc	cacctgctgc	3000
gcggcctgg	ccgcccggg	cggcagcagg	cccgtccgc	gtccactgtg	gacaacggac	3060
tggccggcg	actcgccgg	ctcgcccg	cggagcagga	ggcgctgctg	ctcgacgtcg	3120
tccgcacgca	ggtcgcgt	gtgctcgggc	acgcccggcc	ggaggccgtc	cgcgcggaca	3180
cggcgttcaa	ggacaccggc	ttcgaactcg	tgacgtcggt	ggaactgcgc	aaccggctgc	3240
gcfaggcggag	cgggctgaag	ctgcccgcga	cgctcgctt	cgactaccgc	acgcgggtcg	3300
cgctggcccg	ctacctgcgt	gacaattcg	gcfacacgg	ggcaacaact	ccggtggcca	3360
ccgcggccgc	agcgacgccc	ggcgagccg	tcgccatcg	cggcatggcg	tgccggctgc	3420
cggcgggggt	caccgatccc	gaaggcctgt	ggcgcctggt	gcfacacggc	ctcgaagggc	3480
tgttcctt	ccccgaggac	cggggctggg	acctggagaa	cctgttcgac	gacgaccccg	3540
accgctccgg	cacgacgtac	accagccggg	gcccggcttct	cgacggcgcc	ggcctgttcg	3600
acgcgggctt	tttcgggatt	tcgcccgcgc	aggcgctggc	catggaccgg	cagcagcggc	3660
tgctgctcg	ggcggcotgg	gaagccctcg	aaggcaccgg	tgtcgaccgg	ggctcggtga	3720
agggcgcga	cgtcggtgt	ttcgcggggg	tgtccaacca	gggctatggg	atgggcgcgg	3780
atccggccga	actggcgggg	tacgcgagca	cggcgggcgc	ttcgagcgtc	gtctcggtcc	3840
gagtctcgta	cgtcttcggg	ttcgaaggac	cggcggtcac	gatcgacacg	gcttgcgtcg	3900
cgtcgctgg	ggcgatgcac	ctggccgggc	aggcgctgc	gcagggcggag	tgtcgatgg	3960
ccctggccgg	tggcgtcacf	gtgatgggg	cgcccgac	gttcgtggag	ttcgcaagc	4020
agcgcggcct	ggccggcgac	ggccgggtgca	aggcctacgc	cgaaggcgcg	gacggcacgg	4080
gctggccga	gggcgtcg	gtcgctgtc	tggagcggct	gtcgggtggcg	cgcgacgcgc	4140
ggcacccgggt	gctggcgtg	ctgcgcggc	gcfccgtcaa	ctccgacgc	gcgtccaaacg	4200
gcctgaccgc	ccccaaacggg	ccgtcgac	aacgggtat	ccgcggggcc	ctggccggcg	4260
ccggcctcg	accgtcccgat	gtggacatcg	tggaaaggc	cggcaccggg	acggcgcgtgg	4320
gcgacccgat	cgaggcgcag	gccctgctgg	ccacctacgg	caaggaccgc	gacccggaga	4380
cggcgttgt	gctgggtgt	gtgaagtgc	acttcggca	cacgcagtcc	gcggccggcg	4440
tggccgggg	gatcaagatg	gtgcaggc	tgccac	cgtcatgccc	cccacccctgc	4500
acgtggaccg	gcccaccacg	caggtcgact	ggtccgcgg	ggccgtcgaa	gtgctgaccg	4560
aggcacggga	gtggcccg	aacggccgtc	cgcgcggg	cggggtgtcc	tcgttcggg	4620
tcagcggcac	gaacgcac	ctgatcatcg	aagaagcacc	ggccgagcc	cagctcg	4680
gaccacccg	ggacggcggt	gtgggtccgc	tggtcg	ggctcgac	cccgtgccc	4740
tggccgtca	ggcggtcg	ctggccacgt	tcctcg	cggccccc	tccgacgtcg	4800
ccggtgcgt	gacgacgcgc	gccctgttc	gcfagacgc	gttcgtcg	gcggattcg	4860
ccgagagaac	ccgcgcgg	ctggccgac	tggccgcgg	cgaagacgc	ccggccctgg	4920
tccgcccgg	ggtgcggc	tccggcctgc	cggcgaagct	cgtgtgggt	ttccccggg	4980
aggggacgca	gtgggtggg	atgggcccgc	aactcctcg	agagtctcc	gtgttcggcc	5040
agcggatgc	cgagtgtcg	gccgcgttgc	agccgtggat	cggctgg	ctgttcgac	5100
tcctccgtgg	cgacgggt	ctcgatcg	tcgtgtgt	gcaagccgc	tgcttcg	5160
tgtatggtcgg	cttggcccg	gtgtggct	cggccgggg	ggtcccc	gcgggtcg	5220
gccactccca	gggtgagatc	gccgcggcgt	cggtgtcg	tgcgttgc	ctggaggat	5280
cggcgaaggt	ggttgcctg	cgcagccagg	ccatcgccgc	gaagctctcc	ggccgcggcg	5340
ggatggcttc	ggtcgcctt	ggcgaagccg	atgtgggtc	ggcgctggcg	gacgggg	5400
aggatggctgc	cgtcaacgg	ccggcgtcc	tggtgatcg	ggggatgc	caggccctcg	5460
acgaaaacgct	ggaaggcgt	tccggtgcgg	aatccgggc	tggcggggt	gcgggtggact	5520
acgcctcgca	cacccggc	gtcgaagaca	tcgaagac	cctcgccgaa	gcgtggcc	5580

ggatcgacgc ccgggcgccc ctggtgccgt tcctctccac cctcaccggc gagtggatcc 5640
 gggacgaggg cgtcgtggac ggccgctact ggtacc 5676

<210> 2
 <211> 1875
 <212> PRT
 <213> Amycolatopsis mediterranei

Tyr	Pro	Val	Phe	Ala	Thr	Ala	Phe	Asp	Glu	Ala	Cys	Glu	Gln	Leu	Asp
1		5			10								15		
Val	Cys	Leu	Ala	Gly	Arg	Ala	Gly	His	Arg	Val	Arg	Asp	Val	Val	Leu
	20				25								30		
Gly	Glu	Val	Pro	Ala	Glu	Thr	Gly	Leu	Leu	Asn	Gln	Thr	Val	Phe	Thr
	35				40							45			
Gln	Ala	Gly	Leu	Phe	Ala	Val	Glu	Ser	Ala	Leu	Phe	Arg	Leu	Ala	Glu
	50				55							60			
Ser	Trp	Gly	Val	Arg	Pro	Asp	Val	Val	Leu	Gly	His	Ser	Ile	Gly	Glu
	65				70							75			80
Ile	Thr	Ala	Ala	Tyr	Ala	Ala	Gly	Val	Phe	Ser	Leu	Pro	Asp	Ala	Ala
								85		90			95		
Arg	Ile	Val	Ala	Ala	Arg	Gly	Arg	Leu	Met	Gln	Ala	Leu	Ala	Pro	Gly
								100		105			110		
Gly	Ala	Met	Val	Ala	Val	Ala	Ala	Ser	Glu	Ala	Glu	Val	Ala	Glu	Leu
								115		120			125		
Leu	Gly	Asp	Gly	Val	Glu	Leu	Ala	Ala	Val	Asn	Gly	Pro	Ser	Ala	Val
								130		135			140		
Val	Leu	Ser	Gly	Asp	Ala	Asp	Ala	Val	Val	Ala	Ala	Ala	Ala	Arg	Met
	145					150							160		
Arg	Glu	Arg	Gly	His	Lys	Thr	Lys	Gln	Leu	Lys	Val	Ser	His	Ala	Phe
						165							175		
His	Ser	Ala	Arg	Met	Ala	Pro	Met	Leu	Ala	Glu	Phe	Ala	Ala	Glu	Leu
							180		185			190			
Ala	Gly	Val	Thr	Trp	Arg	Glu	Pro	Glu	Ile	Pro	Val	Val	Ser	Asn	Val
							195		200			205			
Thr	Gly	Arg	Phe	Ala	Glu	Pro	Gly	Glu	Leu	Thr	Glu	Pro	Gly	Tyr	Trp
							210		215			220			
Ala	Glu	His	Val	Arg	Arg	Pro	Val	Arg	Phe	Ala	Glu	Gly	Val	Ala	Ala
							225		230			235			240
Ala	Thr	Glu	Ser	Gly	Gly	Ser	Leu	Phe	Val	Glu	Leu	Gly	Pro	Gly	Ala
							245		250			255			
Ala	Leu	Thr	Ala	Leu	Val	Glu	Glu	Thr	Ala	Glu	Val	Thr	Cys	Val	Ala
							260		265			270			

Ala Leu Arg Asp Asp Arg Pro Glu Val Thr Ala Leu Ile Thr Ala Val
 275 280 285
 Ala Glu Leu Phe Val Arg Gly Val Ala Val Asp Trp Pro Ala Leu Leu
 290 295 300
 Pro Pro Val Thr Gly Phe Val Asp Leu Pro Lys Tyr Ala Phe Asp Gln
 305 310 315 320
 Gln His Tyr Trp Leu Gln Pro Ala Ala Gln Ala Thr Asp Ala Ala Ser
 325 330 335
 Leu Gly Gln Val Ala Ala Asp His Pro Leu Leu Gly Ala Val Val Arg
 340 345 350
 Leu Pro Gln Ser Asp Gly Leu Val Phe Thr Ser Arg Leu Ser Leu Lys
 355 360 365
 Ser His Pro Trp Leu Ala Asp His Val Ile Gly Gly Val Val Leu Val
 370 375 380
 Ala Gly Thr Gly Leu Val Glu Leu Ala Val Arg Ala Gly Asp Glu Ala
 385 390 395 400
 Gly Cys Pro Val Leu Glu Glu Leu Val Ile Glu Ala Pro Leu Val Val
 405 410 415
 Pro Asp His Gly Gly Val Arg Ile Gln Val Val Val Gly Ala Pro Gly
 420 425 430
 Glu Thr Gly Ser Arg Ala Val Glu Val Tyr Ser Leu Arg Glu Asp Ala
 435 440 445
 Gly Ala Glu Val Trp Ala Arg His Ala Thr Gly Phe Leu Ala Ala Thr
 450 455 460
 Pro Ser Gln His Lys Pro Phe Asp Phe Thr Ala Trp Pro Pro Pro Gly
 465 470 475 480
 Val Glu Arg Val Asp Val Glu Asp Phe Tyr Asp Gly Phe Val Asp Arg
 485 490 495
 Gly Tyr Ala Tyr Gly Pro Ser Phe Arg Gly Leu Arg Ala Val Trp Arg
 500 505 510
 Arg Gly Asp Glu Val Phe Ala Glu Val Ala Leu Ala Glu Asp Asp Arg
 515 520 525
 Ala Asp Ala Ala Arg Phe Gly Ile His Pro Gly Leu Leu Asp Ala Ala
 530 535 540
 Leu His Ala Gly Met Ala Gly Ala Thr Thr Glu Glu Pro Gly Arg
 545 550 555 560
 Pro Val Leu Pro Phe Ala Trp Asn Gly Leu Val Leu His Ala Ala Gly
 565 570 575
 Ala Ser Ala Leu Arg Val Arg Leu Ala Pro Ser Gly Pro Asp Ala Leu
 580 585 590
 Ser Val Glu Ala Ala Asp Glu Ala Gly Gly Leu Val Val Thr Ala Asp

595	600	605
Ser Leu Val Ser Arg Pro Val Ser Ala Glu Gln	610	615
Leu Gly Ala Ala Ala		620
Asn His Asp Ala Leu Phe Arg Val Glu Trp Thr	625	630
Glu Ile Ser Ser Ala		635
640		
Gly Asp Val Pro Ala Asp His Val Glu Val	645	650
Leu Glu Ala Val Gly Glu		655
Asp Pro Leu Glu Leu Thr Gly Arg Val Leu Glu Ala Val	660	665
Gln Thr Trp		670
Leu Ala Asp Ala Ala Asp Asp Ala Arg Leu Val Val	675	680
Val Thr Arg Gly		685
Ala Val His Glu Val Thr Asp Pro Ala Gly Ala Ala Val	690	695
Trp Gly Leu		700
Ile Arg Ala Ala Gln Ala Glu Asn Pro Asp Arg Ile Val	705	710
Leu Leu Asp		715
720		
Thr Asp Gly Glu Val Pro Leu Gly Arg Val Leu Ala Thr	725	730
Gly Glu Pro		735
Gln Thr Ala Val Arg Gly Ala Thr Leu Phe Ala Pro Arg	740	745
Leu Ala Arg		750
Ala Glu Ala Ala Glu Ala Pro Ala Val Thr Gly Gly	755	760
Thr Val Leu Ile		765
Ser Gly Ala Gly Ser Leu Gly Ala Leu Thr Ala Arg His	770	775
Leu Val Ala		780
780		
Arg His Gly Val Arg Arg Leu Val Leu Val Ser Arg Arg	785	790
Gly Pro Asp		795
800		
Ala Asp Gly Met Ala Glu Leu Thr Ala Glu Leu Ile Ala	805	810
Gln Gly Ala		815
Glu Val Ala Val Val Ala Cys Asp Leu Ala Asp Arg Asp	820	825
Gln Val Arg		830
Val Leu Leu Ala Glu His Arg Pro Asn Ala Val Val His	835	840
Thr Ala Gly		845
Lys Val Phe Ala Pro Lys Val Thr Ala Ala Asn His	850	855
Leu Asp Glu Leu		860
860		
Thr Arg Glu Leu Asp Leu Arg Ala Phe Val Val Phe	865	870
Ser Ser Ala Ser		875
880		
Gly Val Phe Gly Ser Ala Gly Gln Gly Asn Tyr Ala Ala	885	890
Asn Ala		895
Tyr Leu Asp Ala Val Val Ala Asn Arg Arg Ala Ala Gly	900	905
Leu Pro Gly		910
Thr Ser Leu Ala Trp Gly Leu Trp Glu Gln Thr Asp Gly	915	920
Met Thr Ala		925

His Leu Gly Asp Ala Asp Gln Ala Arg Ala Ser Arg Gly Gly Val Leu
 930 935 940

Ala Ile Ser Pro Ala Glu Gly Met Glu Leu Phe Asp Ala Ala Pro Asp
 945 950 955 960

Gly Leu Val Val Pro Val Lys Leu Asp Leu Arg Lys Thr Arg Ala Gly
 965 970 975

Gly Thr Val Pro His Leu Leu Arg Gly Leu Val Arg Pro Gly Arg Gln
 980 985 990

Gln Ala Arg Pro Ala Ser Thr Val Asp Asn Gly Leu Ala Gly Arg Leu
 995 1000 1005

Ala Gly Leu Ala Pro Ala Glu Gln Glu Ala Leu Leu Leu Asp Val Val
 1010 1015 1020

Arg Thr Gln Val Ala Leu Val Leu Gly His Ala Gly Pro Glu Ala Val
 1025 1030 1035 1040

Arg Ala Asp Thr Ala Phe Lys Asp Thr Gly Phe Asp Ser Leu Thr Ser
 1045 1050 1055

Val Glu Leu Arg Asn Arg Leu Arg Glu Ala Ser Gly Leu Lys Leu Pro
 1060 1065 1070

Ala Thr Leu Val Phe Asp Tyr Pro Thr Pro Val Ala Leu Ala Arg Tyr
 1075 1080 1085

Leu Arg Asp Glu Phe Gly Asp Thr Val Ala Thr Thr Pro Val Ala Thr
 1090 1095 1100

Ala Ala Ala Ala Asp Ala Gly Glu Pro Ile Ala Ile Val Gly Met Ala
 1105 1110 1115 1120

Cys Arg Leu Pro Gly Gly Val Thr Asp Pro Glu Gly Leu Trp Arg Leu
 1125 1130 1135

Val Arg Asp Gly Leu Glu Gly Leu Ser Pro Phe Pro Glu Asp Arg Gly
 1140 1145 1150

Trp Asp Leu Glu Asn Leu Phe Asp Asp Asp Pro Asp Arg Ser Gly Thr
 1155 1160 1165

Thr Tyr Thr Ser Arg Gly Gly Phe Leu Asp Gly Ala Gly Leu Phe Asp
 1170 1175 1180

Ala Gly Phe Phe Gly Ile Ser Pro Arg Glu Ala Leu Ala Met Asp Pro
 1185 1190 1195 1200

Gln Gln Arg Leu Leu Leu Glu Ala Ala Trp Glu Ala Leu Glu Gly Thr
 1205 1210 1215

Gly Val Asp Pro Gly Ser Leu Lys Gly Ala Asp Val Gly Val Phe Ala
 1220 1225 1230

Gly Val Ser Asn Gln Gly Tyr Gly Met Gly Ala Asp Pro Ala Glu Leu
 1235 1240 1245

Ala Gly Tyr Ala Ser Thr Ala Gly Ala Ser Ser Val Val Ser Gly Arg
 1250 1255 1260
 Val Ser Tyr Val Phe Gly Phe Glu Gly Pro Ala Val Thr Ile Asp Thr
 1265 1270 1275 1280
 Ala Cys Ser Ser Ser Leu Val Ala Met His Leu Ala Gly Gln Ala Leu
 1285 1290 1295
 Arg Gln Gly Glu Cys Ser Met Ala Leu Ala Gly Gly Val Thr Val Met
 1300 1305 1310
 Gly Thr Pro Gly Thr Phe Val Glu Phe Ala Lys Gln Arg Gly Leu Ala
 1315 1320 1325
 Gly Asp Gly Arg Cys Lys Ala Tyr Ala Glu Gly Ala Asp Gly Thr Gly
 1330 1335 1340
 Trp Ala Glu Gly Val Gly Val Val Val Leu Glu Arg Leu Ser Val Ala
 1345 1350 1355 1360
 Arg Glu Arg Gly His Arg Val Leu Ala Val Leu Arg Gly Ser Ala Val
 1365 1370 1375
 Asn Ser Asp Gly Ala Ser Asn Gly Leu Thr Ala Pro Asn Gly Pro Ser
 1380 1385 1390
 Gln Gln Arg Val Ile Arg Arg Ala Leu Ala Gly Ala Gly Leu Glu Pro
 1395 1400 1405
 Ser Asp Val Asp Ile Val Glu Gly His Gly Thr Gly Thr Ala Leu Gly
 1410 1415 1420
 Asp Pro Ile Glu Ala Gln Ala Leu Leu Ala Thr Tyr Gly Lys Asp Arg
 1425 1430 1435 1440
 Asp Pro Glu Thr Pro Leu Trp Leu Gly Ser Val Lys Ser Asn Phe Gly
 1445 1450 1455
 His Thr Gln Ser Ala Ala Gly Val Ala Gly Val Ile Lys Met Val Gln
 1460 1465 1470
 Ala Leu Arg His Gly Val Met Pro Pro Thr Leu His Val Asp Arg Pro
 1475 1480 1485
 Thr Ser Gln Val Asp Trp Ser Ala Gly Ala Val Glu Val Leu Thr Glu
 1490 1495 1500
 Ala Arg Glu Trp Pro Arg Asn Gly Arg Pro Arg Arg Ala Gly Val Ser
 1505 1510 1515 1520
 Ser Phe Gly Ile Ser Gly Thr Asn Ala His Leu Ile Ile Glu Glu Ala
 1525 1530 1535
 Pro Ala Glu Pro Gln Leu Ala Gly Pro Pro Pro Asp Gly Gly Val Val
 1540 1545 1550
 Pro Leu Val Val Ser Ala Arg Ser Pro Gly Ala Leu Ala Gly Gln Ala
 1555 1560 1565
 Arg Arg Leu Ala Thr Phe Leu Gly Asp Gly Pro Leu Ser Asp Val Ala

1570	1575	1580
Gly Ala Leu Thr Ser Arg Ala Leu Phe Gly Glu Arg Ala Val Val Val		
1585	1590	1595
Ala Asp Ser Ala Glu Glu Ala Arg Ala Gly Leu Gly Ala Leu Ala Arg		
1605	1610	1615
Gly Glu Asp Ala Pro Gly Leu Val Arg Gly Arg Val Pro Ala Ser Gly		
1620	1625	1630
Leu Pro Gly Lys Leu Val Trp Val Phe Pro Gly Gln Gly Thr Gln Trp		
1635	1640	1645
Val Gly Met Gly Arg Glu Leu Leu Glu Glu Ser Pro Val Phe Ala Glu		
1650	1655	1660
Arg Ile Ala Glu Cys Ala Ala Leu Glu Pro Trp Ile Gly Trp Ser		
1665	1670	1675
Leu Phe Asp Val Leu Arg Gly Asp Gly Asp Leu Asp Arg Val Asp Val		
1685	1690	1695
Leu Gln Pro Ala Cys Phe Ala Val Met Val Gly Leu Ala Ala Val Trp		
1700	1705	1710
Ser Ser Ala Gly Val Val Pro Asp Ala Val Leu Gly His Ser Gln Gly		
1715	1720	1725
Glu Ile Ala Ala Ala Cys Val Ser Gly Ala Leu Ser Leu Glu Asp Ala		
1730	1735	1740
Ala Lys Val Val Ala Leu Arg Ser Gln Ala Ile Ala Ala Lys Leu Ser		
1745	1750	1755
1760		
Gly Arg Gly Gly Met Ala Ser Val Ala Leu Gly Glu Ala Asp Val Val		
1765	1770	1775
Ser Arg Leu Ala Asp Gly Val Glu Val Ala Ala Val Asn Gly Pro Ala		
1780	1785	1790
Ser Val Val Ile Ala Gly Asp Ala Gln Ala Leu Asp Glu Thr Leu Glu		
1795	1800	1805
Ala Leu Ser Gly Ala Gly Ile Arg Ala Arg Arg Val Ala Val Asp Tyr		
1810	1815	1820
Ala Ser His Thr Arg His Val Glu Asp Ile Glu Asp Thr Leu Ala Glu		
1825	1830	1835
1840		
Ala Leu Ala Gly Ile Asp Ala Arg Ala Pro Leu Val Pro Phe Leu Ser		
1845	1850	1855
Thr Leu Thr Gly Glu Trp Ile Arg Asp Glu Gly Val Val Asp Gly Gly		
1860	1865	1870
Tyr Trp Tyr		
1875		

<211> 53799

<212> DNA

<213> Amycolatopsis mediterranei

<400> 3

gaattccagg ccgtcgacgg ctgcgacatc gcggtcttcc ggtggtcgca cgcacgaag 60
 atccccaaat aagaatttcc ggatctcca cggaaagggt ttccatgacc gacgcaatat 120
 ccttcgaggt gccgtggac cggaccgaca agttcgaccc gcccgcggtg ttcgactctc 180
 tgccgcaaga acgtccgctc gcgaagatgg tttaccggta tgggcacgtc ggctggatcg 240
 tttccagcta cgagctggtc cgcgagggtcc tcagcgacct gcggttcagc cacagctgctg 300
 aagtccgcca cttcccggtg acccaccagg gccaggtcat cccgaccac ccgctgatcc 360
 cccgcatttt catccacatg gacccgcccgg agcacacgctg ctaccgcaag ctgctgaccg 420
 gcgagttcac cgtccgcccgc cccagcaggtc tgatcccgcc ggccgaggcc gtggccgccc 480
 agcagatcgaa ggtcatgctgg gccaaggccgg ccccgccggta cgtggatcgacttgc 540
 agccgctgggt gctgcggatg ctggggcggc tcgtccggct gccctacgag gaacgcgacc 600
 ggtacgtgcc cgcgggtgacc ctccgtcaccg acgcccgaagc ggacccggcc gaggccgccc 660
 cccgcctacgaa ggtggccggg aagttcttcg acgaggatcat cgagcgcgc cggcagcggc 720
 cccaggacgaa cctcatcagc tcgtctgtca ccgaggaccc gacccaggag gagctgcgca 780
 acatcgctac cctgctgtgt ttccgggggt acgagaccac cgaggccggc ctgcgcaccg 840
 gcgtttcgc gctgctgcac cacaccgatc agctggccgc actgcgcgc gagccggaaa 900
 agctcgacgc cgcgatcgaa gagctgctgc gctaccgtac cgtcaaccag taccacaccc 960
 accgcaccgc gctggaggac gtgaagctgg agggcgagct gatcaagaag ggcgacacgg 1020
 tgacgggtgtc gctgcccggc gccaaccggc acccgccaa gtcggctgt cccgcggagc 1080
 tcgacatcgaa gccccacacc tccggccacg tcgcgttcgg ctgcggcattc caccagtgc 1140
 tggggccagaa cctggcgccgc atcagactgc gggccggctt cacggcgctc ctgcggccgt 1200
 tccccgagct cccgctggcc gtccggccgg acgagggtcc gtcggctgt aagggttccg 1260
 tcttctcggt gaagaagctg cccgtctcct ggtgagcggtt ctccccctcg aacacccgaa 1320
 aggatctcgaa gcacagtgcg caccgatctc atcaagccac ttacacgtcg actcctggag 1380
 aacgcgaccc gcttcgcggg caagccggcc ttgcggcagc accaccggac ggtcacctac 1440
 ggccgacccgc aggccggac gcccggctg gcccggcacc tggccggccct cgggtccgg 1500
 cacggcgacc ggggtggcgat ctgcctcgcc aaccgggtgt coactgtgga gagttacttc 1560
 gcgatcctgc gcgccgggtgc cgtccggcggt cccgtcaacc cccgttcggc gacggccgag 1620
 ctcgagcacc cgtcgaccga cagccggcgcc acgggtggcg tcaccgcgc cggccaggcg 1680
 gccccggctcc ggctcgccgc gcaactcgag ctgctggta cccggcgacg cgtccggag 1740
 ggccgcccact cctacgacga actcgccctc agcgaaccgg cccggccgc cccggacgc 1800
 ctcgagctcg acgagccggc gtggatgttc tacacgtcg gcaacgaccgg gcccggccaag 1860
 ggccgctgtgt ccacgcageg caactgcctc tggccgtcg ctgcgtcgacta cgtgcgttc 1920
 cccgggttgtt cggaccagga ccgggtgtcc tggccgtcc cgtgttcca cagcccttcg 1980
 cacatcgccct gcttcctgtc cgccaccgtg gtcggggcca gctgtccggat cgccgacggc 2040
 agctccgccc acgacgtatc gctgatcgatc gaggccggaga gtcgacccctt cctggccggc 2100
 gtggccgacca cctaccacca cctgggtcgcc gcccggccgc agcgcgggtt ctccgcggcc 2160
 agcctcgccga tcggcctggc cggggccgcg gtcctcgcc cccggctcg aagcgagttc 2220
 gaagagaccc tgggggtccc gctgatcgac gctacggca gcaaccggac ctgcggggcg 2280
 atcaccatga accccggccga cggcgccgcg gtcgagggtc cgtgggtt gcccgtccgc 2340
 ggcgtcgacg tgccgggtcg cggccggcacc accgggtcg acgtcccccg cggcgaggag 2400
 ggcgagggtct gggtcagcg gccgaacgatc atgctcggtt accacaacag cccggaggcg 2460
 accgcgcggc cgtcgccggc cggctgggttc cggaccgggg acctggcccg cccgcacgc 2520
 gcccggtaact tcaccatctg cggccggatc aaggaactca tcatccgcg cggcgccgaa 2580
 atccaccccg gcgagggtcg ggcgggtctcg cgcacgggtcg acggcgatcg ggacgcggcg 2640
 gtcggccgggtg tgccgcacga cagctcgccg gaggtgcggg tgcctacgt catcccgaa 2700
 ccgaccgggtt tcgatcctgc ggcgttgatc gagaagtgc gcaacacagot gtccgcctac 2760
 aagggtccggg accggatccct cgagggtcgcc cacattcccc ggaccgcgtc gggcaagatc 2820
 cggcgccggc tgctgaccga cggccggcgt cagctcggt acggccgcac cgaacacgag 2880
 gaacagtccc ggcacgcggc cggatcgatc gccggccgcg tgcgcgcgcg actgtccgg 2940
 ttggacgaac gcccggatgt cggatcgatc gaaagactcg tccgcacccca ggcggccgac 3000
 gtgtccgggc agccgggtcc ggcggccgt ggcgtccgcg acctcggtt cacgtcgctg 3060
 gcccgtcgcc agctcgccaa cggccgtacc gggccacaccg ggctctgggt gcccggccagc 3120
 gccgtcttcg accaccggcc gccggccggc ctggccgccc ggcgtccggc tgagtcctc 3180
 gggatcacgc aggccgtcgcc gggccggcgt gtcgcggccg accccggccg gccgatcg 3240
 atcggtggggta tggccgtccg cctggccgggtt ggcgtccggcgt ccccgaaaga cctgtggccg 3300
 ctgggtggccg agcgcgtcgaa cggccgttcg gatcccccgg ggcgaccgcgg ctgggaccc 3360

gacagcctga tcgaccggc cccggagcgc gcccggacgt cgtacgtcgg ccagggcgga 3420
 ttctgcacg acgcggcga gttcgacgca gggtttctcg ggatctcgcc gcgtgaggcc 3480
 gtcgcgtgg acccgacgca gcggttctg ctggagacgt cgtggggaggc cctcgaaaac 3540
 gccggagtgc acccgatcgc gttgaaggc accgacaccg gctgtttctc cggcctcatg 3600
 ggccaggggt acgggtccgg cgccggcggc cccggagctcg aaggtttcgt caccacccgg 3660
 gtcgcgtca gctggcctc gggccgggtg tcgtacgtgc tggacttggaa aggccggcg 3720
 gtcaccgtgg acaccgcgtg ttctgtcgat ctggtcgca tgcacctggc cgcgcaggcc 3780
 ctgcggcagg gcaaatgtc gatggcgctc gccggggggg tcaacggtgat ggcacacggcc 3840
 ggctcggtcg tcgagttctc ccggcagcgg gcccctggc cccacggggc cttgcaaggcc 3900
 ttcgcggcgg cggccgacgg gaccggctgg tccgagggtg tccggctgtt cgtccctcgag 3960
 cggctgtccg tggcgcgcga gcggggccac cggatcctgg ccttttgcg tggcagcgcg 4020
 gtcaaccagg acggcgcgtc caacgggctc accgcgccga accggcctctc gcagcagcgg 4080
 gtcatccgcc ggcgcgtggc cgccggccggg ctggcaccgt ccgtatgtgg cgtcgtcgag 4140
 ggcgcacggca cccggaccac gctgggtgac ccgtatcgagg cgcaggccct gctggcgacc 4200
 tacggccagg agcggaaagca gccgttggg ctgggttcgc tcaagtcaaa catggccac 4260
 ggcgcaggcgg cccggggcgt tgccggcgat atcaagatgg tgcaggcgat ggcgcacggag 4320
 accttgcgc cgcgcgtca tgctgacaag ccgactcttgc aggtggactg gtccggccgg 4380
 gccattgaac tgctgacgga ggcccggtcg tggccgcga accggcgtcc ggcgcggggcc 4440
 ggggtgtcg tggcggcgt cagcgggacc aacgcgeacc tggatctggg ggaggcggcc 4500
 gccgaggagc cggtcgtcgc cccggaaactg ccgggtggc tccctgggtt gtcggcgccgg 4560
 agcacggagt cgctgtccgg gcaggccgag ccgtggcgtt ccctcctcgaa aggggacgtc 4620
 tcgctgaccg aggtggccgg ggcgttggg tccggccggg ccgtgtggaa cgagcggggcc 4680
 gtcgtcgtgg cccgttcgcg cgaggaagcc gtgaccgggc tgccggcgat gaacacggcc 4740
 ggttcgggga cgccgggcaa ggtcggtgg gtgttcccg ggcaggggac gcagtggggcc 4800
 gggatggggcc gtgagctgtt ggccgagtc ccgggtgtcg ccgagcggat cgccgagtgc 4860
 gcccggcgcgt tggcgcgcgt gatcgactgg tcgctcgatc acgttctcgcc cggcgaggcc 4920
 gacctgggtc gggtcgtatgt gctgcagccg ccgttgcgtcg ccgtgtatggt cggggctggct 4980
 gccgtctggg agtccgtggg ggtccggccg gacgcgtcg tccggcactc gcagggttag 5040
 atcgccgctg cctgcgttcc gggggcggtt tccctcgagg acgcggcgaa ggtgtggcc 5100
 ctgcgcagcc aggccatcgc ggcggaaactg tccggccgcg gccggatggc gtcggcgcc 5160
 ctggcgagg acgacgtcgt ttccggcgtg gtggacgggg tccggatcgcc cggcgtaaac 5220
 gccccgtcg tggcggatcg ccggggggat gcccattcccc tcgacgcgcac cctggaaatc 5280
 ttgtccgggg aaggcatccg gttccggccg gtggcgggtt actacgcctc gcacacccgg 5340
 catgtcgagg acatccgcgaa cactttgcg gaaacccctgg ccgggatcgat tgcgcaggcc 5400
 ccggctgtgc cgttctactc caccgtcaccg agcgagttggg tccggcgcacgc ggggggtgt 5460
 gacggcggct actggtaccg gAACCTGCGC aaccaggatcc ggttccggagc ggcgcgcacg 5520
 gcccgtctcg agcaggggcca cacgggttcc gtcgaggatca tgcgcgcaccc ggtacgggtc 5580
 cagcccttga gcgagctcac cggggacgcg atcggggacat tgcggcgtga agacgggtggc 5640
 ctgcggcggt tgctggctt gatgggttag ctgttcgtcc gccggcatcgat cgtggacttgg 5700
 acggcgatgg tggccgcggc cggctgggtc gacttgcgcgat cctacgcgtt cgaacacccgg 5760
 cactactggc tcgagccccgc cggccggatc tccggccggg acccgctgtc gggcacagtc 5820
 gtcagcactc ccgggttcggc ccgacttcacc gcccgtggcgc agtgggtcgcc cccggcgccag 5880
 ccctggcggt tggacggccct ggtccggaaac gccggccctgg tcgaggccggc catccggctc 5940
 ggcgcacctgg ccggcaccccc cgtcgccggc gaaactgggtcg tcgacgcgcgc ggtgtgtgt 6000
 ccggcgccgcg gcaaggccgcg ggtcccgatcg atcgtccggc gacccggcgaa gcaaggccgg 6060
 cgtccgatcg aggtcttttc ccggggaaagcc gacgagccgt ggacgcggca cgcgcacggc 6120
 acactcgctc ccggccgcgc tccgggttccca gaaaccggccg cggccgggaga cgcacccggac 6180
 gtcaccgtgg ccggccctcgcc gcaacgcggac ccgtacggga tccaccccg tctgtgtggac 6240
 gcccggctcc gcaacggatcg cggcgacgcg ctgtcccgat cgtgtgtggac cggcggtgtcc 6300
 ctgcgtggctt ccggggccac ggcgttgcacc gtgacgcgcg cggccggccgg cctggggctg 6360
 accgaccggc ccggccgcgc cgtccctgacc gtcgaatccg tccggccgcac gccgttcgtc 6420
 gccgagcagg ggaccaccgc cgcgtcttc cgcgtcgact ggcgggaaat cccgtcgccc 6480
 accgcccggaa ccggcgactt cctggcgatcg gaaaccggat cggccggaggc gaccctctcc 6540
 ggcgcacccgg cctggcgatcg agaccggccg gaaaccggcc tggccgtgtt caccggggac 6600
 tgcaccggaa ccggccgcgc cgcgtatctgg ggcctgggtgc gtcggccgc gtcggaaacac 6660
 cccggccggaa tggcgatcgcc gcaaccctcg gacccggccg tccggccgc cgtgggtggcc 6720
 agcggcgaaac cgcgtatcgcc ggtccggccac ggcgttcgtt ccgtgtggcc cttgacccgg 6780
 gttactcccccc ggcaggacgc ggcggccgtc gacccggagg gacccgttccat gatcaccggc 6840
 ggcacccggca cgcgtcgatcg gtcggccgc cggccaccccg tccggccgc ggcgtccgg 6900
 cacctgggtcc tggcgatcgcc ccggcggttcc gtcggccgc tccggccgc actgacccgc 6960
 ctggggccat cgcgtcgatcg cgcgtccgtc gacgtggccat accggggccat gtcgaaagcc 7020

gtcttcgcgc cgatccccggc cgagcaccccg ctcacccggc tgatccacac cgccgggggtc 7080
 ctgcacgacg cgctcgtaac cgagctgacc ccggaccggc tcgcccacgt gcggccggccg 7140
 aaggtcacg ccccccggct cctggacgag ctcacccggg agggcgatct cgcccggttc 7200
 gtgttgttct cctcggccggc gggtgtgtct ggcaaccccg gcaggccgg gtacgcccgc 7260
 gccaacgccc agctggatgc tttggcgccgc cagcggaaaca gcctcgaccc gcggccgggt 7320
 tccatcgcat ggggctactg ggcgacggtc agcgggatga cccgagcaccc gggcgacgccc 7380
 gacctgcggc gcaaccagcg gatcgccatg tccggggttc cccgcccacga gggcatggcg 7440
 ctgttgacg cccgcattcgc caccgggtggc acgctggtcg cggccaaagt cgacgtcgcc 7500
 ggcgtgcggg cgacggcgaa ggccggccggc ccgggtccgc cgctgtcgcc tggccctggcc 7560
 ccgctgcgcg cccggggccggc ggccaagacc gcgtcgctga cccgaaacgcct cgccggggctg 7620
 gccgagaccg agcaggccgc ggccctgctc gacctggtcc ggcggcacgc cgccgagggtg 7680
 ctcgggcaca gccggccgcg atccgtccat tcaggacgga cttcaaggg cgcgggttc 7740
 gactcgctga ccgcgggtgg actgcggAAC cgcctcgcc ccgcgaccgg gtcaccctg 7800
 tccccggcga tgatcttcga ctacccgaag ccccccggcc tcgggacca cctgcgcgc 7860
 aagctcttcg gatcgccggc gaaccggccg gccgagatcg gcaccggccg ggggaggag 7920
 ccgatcgca tcgtcgccat ggctgcccgc ttccccgggt gcgtgcacag ccccgaggac 7980
 ctgtggccgc tggctgcccga cggccggcgc gccgtcaccg agttccccgc cgaccggc 8040
 tgggacaccg accggctcta ccacgaagac cccgaccacg aaggcacgac gtacgtccgg 8100
 cacggcgcc ttcgtacga cccggccggg ttcgtacgcgc ctttcttcgg catctcgccc 8160
 aacgaggcgcc tgcgcattgg cccgcagcag cggctgtgc tggagacggtc ctgggagctg 8220
 ttcgagcggg cccgcacgcg cccgaccacg ctggccggcc aggacatcggt cgtctcgcc 8280
 ggcgtcaaca gccacgacta cagcatgcgg atgcaccggg cccgggtgt cgagggttc 8340
 cggctcaccg ggggttcggc cagcgtgcgc tccggccgcg tcgcctacca cttcgccgtc 8400
 gaaggcccg ccgtcacggt cgacacggcc tgctcgctt cgtctggtcgc gtcacatg 8460
 gcgggtcagg ccctgcagcg cggcgagtgc tccatggccgc tcggggccgg cgtatgggt 8520
 atgggcacgg tgcagacgtt cgtcgagttc tcgcggcgcg ggggctggc cccgacggc 8580
 cgctgcaagg cggtcgccga cggcgccggac ggcacccggc ggtccgaggcg cgtccggctg 8640
 ctcttgggtgg agcggctgtc cgaggctcag cgtcgccggc accaggcttc cggcggttc 8700
 cgggggtcg cggtaactc cgacggcgcc tgcacgggt tgacggcccc gaacggcccc 8760
 tcccagcagc ggcgtatccg caaggcactg gccggccccc gactgtccac atcgacgtc 8820
 gacgcgggtgg aggccacggg caccgggacg accctggcg acccgatcg ggggaggcg 8880
 ctgctggcca cttacggcca gaaccgggaa acgcccgtgt ggctcggtc ggtgaagtcg 8940
 aacccctggcc acacgcaggg ggctcggggt gtcgcaggcg tgatcaagat ggtcatggcc 9000
 atgcgccacg ggcgtctcc cccgacgcgtg cacgtcgacc gggcgctgtc ctagtggac 9060
 tggtcggccg gtgcggtcga gctgtcgacc gaggcacggg actgggtgag caacggccac 9120
 ccgcggccgcg cggcggtgtc gtgcgtccgc atcgccggca ccaacgcgcg cgtcgccctc 9180
 gaagagggtg cccgacccat caccacggc cagcgtacgc cggccgaggtt cttggccgc 9240
 gtgtcgctct cccgcccggac ggccggccgggt ctgcgcggcc agggccggacg gtcgcccgc 9300
 ttccctggcg accggaccga cgtcccggtc cccgatccgc cttacgcact ggccaccacg 9360
 cgcgcccagc tcgaccaccc ggccgtcgcc tcggccctccg accggggcaca gtcgtcgccg 9420
 gacccggccg cgttcggcgc cggcggtcgat accggaaacgc cgggtgacgg caagctggcc 9480
 gtgtcttcga cccggccaggc cagccagtgg gccgggatgg gccgtgaact cggcgagacg 9540
 ttcccggtct tccgcacgc cttcgaggcc gctgtcgagg cctgtggacac gcacctcggt 9600
 gagcgccgc tgcgcgaggt cgtgttcgac gacagcgccg tgctcgacca gacgtgtac 9660
 accccaggccg ccctgttcgc cgtggagacc gctgtgtcc gctcttcga gtcctgggtt 9720
 gtgcggccgg gtcgtctcgcc cggtcactcg atcgccgcgc tcggccggcc gcacgtgtcc 9780
 ggcgtgtgg acctggccga cggcgccggat ctggtcgccc cggcgccggcc gctgtatgcag 9840
 gcccgtcccc cggcgccggcc gatggtcgcc gtccaggcga cggaggacga agtcgcgc 9900
 ctgtcgacg gcacgggtct cgtcgccgcg gtcaacggtc cggactcggt ggtgtctcc 9960
 ggcacccgaag cccggcggtc cggcgccgcg gatgaactgg ctggtcgccc cctgtggacc 10020
 cgacggctgg cctgtacgc cgcctccac tcgcccgtca tggaaaccgt gtcgacgcac 10080
 ttcccgccgg tgcgcgaaacg cctgcacgtac cggccgggtt cgtctcccg cgtctcgacg 10140
 ctgaccgggg aactcgccgc gtcgcacagc cggactact ggtcgccca ggtgcgcac 10200
 gccgtcggt tcagcgacgc cgtcaccgcg ctggccggcc aaggcgccgtc gacgttcctc 10260
 gagctcgcc cggcggtgtc gtcgcgcgcg atggcgctcg gcacgtcgcc cggaccggag 10320
 cagagctcg ctcgcacccct ggcgaagaac ggcggccgagg tgcccgacgt ctcaccgcg 10380
 ctcgcccgaac tgcacgtccg gggcggtggc gtcgactggc cggactcggt cgtacgaaaccg 10440
 gccaacggccg tccggaccgt cctgcgtcc tacgcgttcc agcaccagcg cttctgggtc 10500
 gacgtcgacg aaacagcgcc cgtcagcgac accccggccgc cggcgccggac gatcggtggac 10560
 cggccgggtgc aggacgtgtc ggagctggtc cggagagcg cccgggtgtt gtcggggcac 10620
 cggacgcgcg cagtttcga ctcgcacccgg tccttcagg accacggctt cgtactcgcc 10680

agcgcggta agctgcgcaa ccgtctgcgc gacttcaccg gggtggagct gcccagcacc 10740
 ctgatctcg actacccgaa cccggccgtc ctgcggacc acctgcgggc cgaactgctc 10800
 ggcgagcgcg cggccgcgcc gccccgggtg acgaggagacg tctccgacga gccgatcgcg 10860
 atcgctggca tgagcacccg gctgcccgggt ggcgcccaca gccccgaaga gctgttgaag 10920
 ctgcgcggg aggacggga cgccgtgtcc ggctccccc tcgaccgcgg ctgggacctc 10980
 gacggctct accacccgga ccccgcccac gccgggacga getacacgcg ttccggcgcc 11040
 ttccctgcacg acgcggccca gtgcacgccc gggctttcg ghatctcacc gcgtgaggcc 11100
 ctggccatgg acccgagca gcggtgtcg ctggagacgt cggtggaaagc cttggagcgc 11160
 gcgggggctg acccgctgtc cgcccgccggc agcgacgtcg ggcttccac cggatcgctc 11220
 caccacgact acgtgacgctg gctgcgcgaa gtgcccgaag acgtccagggt tacacacgt 11280
 accggcacgg ctgcgagcgt ggcgtcgccg cgggtggcg acgtcttcgg ttccgaggcc 11340
 ccggcggtca ccgtggacac cgctgttgcg tcgctgcgttgcgatgc cctggcgccg 11400
 caggcgctgc ggcaggggga gtgctcgatg gccctggccg gccggcgcac cgtatggcc 11460
 agcccgacg cttcctcga gttctcccgcc cagcgccggcc tgcggccggaa cggccgggtgc 11520
 aaggcgtacg cggaaaggcgc ggacggcacg ggctggccg agggcgctgg tgcgtcgctc 11580
 ctgcacggc ttccgggtgc acgcgaacgt ggccacccgg tgctggcggt cctgcgcggc 11640
 agcgcggta accaggacgg tgcttccaac ggcctgaccg ccccgaaacgg gccgtcgccag 11700
 cagcgggtga tcccgccgcg gctggcgagc gccgggctgg caccgtccga tgtggacgtc 11760
 gtggaggggcc acgggacccgg gaccgcgtg ggtgacccga tgcgggttca ggcgtgtcg 11820
 gccacctacg ggcaggagcg gaaacagccg ttgtggctcg gctcgctgaa gtcgaacctc 11880
 gggcacacgc aggcccgccg cgggtgtcg ggcgtgatca agatgtatcat gccatgcgc 11940
 cacggcgtca tgccggccac gtcgcacgtc gacgagcgcg cggagccagggt cgactggcg 12000
 gcgccgcgca tgcgggtgtt gaccgaggcc cggaggtggc cgccgcaccgg acgtccgcgc 12060
 cggggccgggg tgcctccctt cggcgccagc ggcaccaacg cgccacctgtat catcgaggaa 12120
 ggtcccgccg aagaggccgt ggcacgaaagag gtggccctcg tggtgccggt ggtcgcttcc 12180
 gcccgcagcg cccgttcgtt ggcggggcag gccgggccc tggccggcggt cctcgagaac 12240
 gaatcggtgg cccgggtggc cgggtccctg gttccggcc ggcgcacgtt gacgagcgc 12300
 gcggtcgta tgcgggctc cccgcacgcg gcccaggacg gctgcaggcc actggccgc 12360
 ggcgagaacg cggccggcggt cgtgaccggg acggccggca agccgggcaa gtcgtctgg 12420
 gtcttcccg gccagggtctc gcaagtggatg ggcattggcc gggacccctt ggactccctcg 12480
 cccgttcccg cccgcggat caaggaatgc gctgcggcac tggAACAGTG gaccgactgg 12540
 tcgctgtcg acgtgctcg cggcgacgccc gacctgtgg accgggtcg cgtgtcgac 12600
 cccgcagct tcgcgtatgtat ggtcgccgtc gccgcgggtt ggcacccgtt ggggtgacc 12660
 cccgcgttcccg tgcggccca ctcccgaggcc gagatcgccg cggcggtcg tgcggccgc 12720
 ctgtcgctgg acgacgcggc gaagggtggc gctgtcgca gccaggcgat cggggggag 12780
 ctggcgccgc gcccgggat ggcgtcggtc gcaactgagcg aagaggacgc agtcgcgcgg 12840
 ctgacgcgcgt gggcgaaccg ggtcgaggtg gccgcgggtca acagccgtc ctgcgtcg 12900
 atcgccggag acgcgcaggc cctcgacgaa gcccgtcaag cccctggccgg cgacgtgtc 12960
 cgggtccggc ggggtcggtt ggactacgccc tcccacaccc ggcacgtcg ggcgtcgcc 13020
 gaaaccctgg ccaagacctt ggcggggatc gacgcgcggg ttccggcgat tccgttctat 13080
 tccaccgtcc tgggcacgtg gatcgagcag gccgtcgatc acgcgggcta ctggtaccgg 13140
 aacctcgccg acgagggtcg gttcgcccccc tcgggtggccg acctggccgg gtcggggcac 13200
 acgggtttcg tggagatcag cggccaccccg gtgctggatc agccgtcgat cggatcagc 13260
 gacgacgcgg tggtgaccgg gtcgtcgccg cggacgcacg gggactgcg ggcgtcgctg 13320
 ggcgtcgccg cccgaaactgtt cgtccggggc gtcggccgtt actggacggc ggcgtgccc 13380
 gcgccggct ggggtggaccc gccgcacgtac gccttcgacc gccgcactt ctggctgcac 13440
 gaagccgaga cccgcgaagc cggcgaggcc atggacggcg agttctggac ggcgtatcgaa 13500
 cagtccgtat tggacagctt ggcgcagctg ctcgagctgg tgcggagcga ggcggggcg 13560
 ctcagcaccg tctgtcccg tgcgtcgccg tggcgccgacc ggcgcggccg ggcgtcgacc 13620
 gcgaggagaacg tgcgttacca ggtcacccgtt cagccctgg agcgcgaagc cggccggcg 13680
 cccggccggc gctggcttgc cgtctcccg gccggccacca cccgcacgcgt cctgaaggag 13740
 ctgaccggcc agggactcga catgtcccg ctggagatcg aggaagctt cggggcacag 13800
 ctgcgcgagc agctgcggaa cgtcttcgtcg gaggacgacc tcaccggcg gctgtcgctg 13860
 ctgcgtctcg acggcgcccc cggcgacgcg gccgagatca cccgcgtcgac gtcgcgtcg 13920
 gtccaggccc tggcgacac caccacgtcc ggcggccgtt ggtgcctcac ttccggcg 13980
 gtgaacatcg gcatcccgat cggcggttacc gacccgttacc gacccggccg gtcggggctc 14040
 ggcggggccg tgcgttacca ggcgttccgac cgggtggccgg gctgttccg cttggccgc 14100
 gcgatcgacg cccgcacggc tcaaggccctg ctcggcgatcc tgaacggcg cggccggggaa 14160
 gaccagctcg cggtccggcg ctcggcgatcc taccgcaggc ggcgttccg caagccgtg 14220
 cccggagtcg cggcgacgcg gtgggaaccc cggggcacgg tcctggtgc cgggtggggcc 14280
 gaaggactcg gccggcacgc ctcggtctgg ctcgcgcagt cccggccgcg acggatcatac 14340

gtcaccggca ccgacggcgt cgacgaactg acggccgagc tggccgagtt cggcaccacg 14400
 gtcgagttct gcgcgcacac cgaccggac ggcgcgcgc agctggtggc ggactcggag 14460
 gtcaccggcg tggtgacacgc cgccggacatc ggcgcagacca gtcggatcgca cgacaccggc 14520
 gtggccgacc tcgacgaggt gttcgccgacg aagggtgacca cccgggtgtg gctggaccag 14580
 ctgttcgagg acaccccgct cgacgcgttc gtcgtgttct ctcgcacatcg cggcatctgg 14640
 ggcgggtggcg ggcaggggccc ggcgggtgcg gcaacgcgc tcctcgacgc cctggatcgaa 14700
 tggcgccggg ccccgccct caaggcgacg tcgatcgctt gggcgccgtc cgaccagatc 14760
 ggcateggca tggacgaggc cgcctcgcc cagctgcgc ggcgcgggtg catcccgatg 14820
 ggcggccgcg tggcggtcac cgcgatggt caggcggtcg cccgcaacga gaaggccgtg 14880
 gcggtggccg acatggactg ggccgccttc atcccggtt tcacctcggt cccgcccagc 14940
 ccgctgttcg ccgatctgcc cgaggcgaaag gccatccctcc gggcgccgca ggacgacggc 15000
 gaagacggcg acaccgcgtc gtcgctcgac gactccctgc ggcgcggtccc cgacgcccag 15060
 cagaaccgcg tccctgtgaa gctggtccgc ggccacgtt cgacgggtgt cggccacagc 15120
 ggcggccgaag gcatcgcccc ggcgcaggcg ttccaggagg tggcttcgca ctcgctggcc 15180
 gcggtcaacc tccgcaacag cctgcacqcg gccaccgggc tgccgtcgcc cgcgacgctg 15240
 atcttcgact accccacccc ggaggcgctg gtcggctacc tgccgtcgta actccctgcgg 15300
 gagggccgacg acggccttggc cgggcgggaa gacgacctcc ggcgagtcct cgcggccgtg 15360
 ccggttcgccc ggttcaagga ggcggggcgtg ctggacacgc tgctcgccct cggccacacc 15420
 ggcaccgaac cgggcacggc cgccgagacc accgaagcg cccggccgc cgacgacgca 15480
 gaactgtatcg acgcacttggc catctccgtt ctcgtcaac gagccctcg gcaagacgagc 15540
 tgaccggccga tggcgaacca atcgtggagg aagaacatgt cccgcccggaa cgagcagatc 15600
 gttgacgcac tgcgcgcgtc gtcgaaggag aacgtccggc ttccagcaggaa gaacagcg 15660
 ctcgcgcggc cggccgcggc gcccgtcgac atcgtctcca tgccctgcgc ctacgcgggc 15720
 gggatccgcg gcccggagga cttctggcgg gtgggtgcgg aaggcgccga cgtctacacc 15780
 ggcttccccg aggaccgcgg ctgggacgtc gaaggccctt accaccggc ccccgacaac 15840
 cccggcacga cgtacgtcg cggggcgcc ttccctgcagg acgcccggca gttcgacgccc 15900
 ggggttctcg gcatctcgcc gcgcgaggcg ctggccatgg acccccgacca gcccggacgtc 15960
 ctggaggtgt cttggagac cttggAACGG gccggcatcg accccgattt ggtgcggggc 16020
 agcgacatcg gctctacgc cggggcgtg caccaggact acgccccggc ctcagcg 16080
 ttccgaaggct tcatgagctt ggagcgcgc cttggcaccg cggggcggtgt cgcctccggc 16140
 cgggtcgccct acacgctcg gtcgaaggc cccggcgtca cccgtcgacac gatgtgtcg 16200
 tcgtcgctgg tggcgattca ctttgcgcg caagctttc gccgtgtgt gtcgtcgatg 16260
 gcccgcgcg gcggctcgac cgtatggcg accccggcg gtttcgtcg cttcgccgt 16320
 cagggggcgt tggccttgcg cggcgctgc aagtccctac cccggggccgc cgacgggttc 16380
 ggctggcccg agggcgctgg cgtgtcgctg ctggagcgcc tgcgggtggc ggcgcagcgc 16440
 gggcaccagg tgctggccgt catccgcggc agcgcgggtca accaggacgg cgcttcaac 16500
 ggcctgaccg cggccaaacgg cccggcgcag cagcgggtca tccgcaaggc actggcgagc 16560
 gcccggctga caccgtccga tgggacacc gtggaggggcc acggcaccgg caccgtccctc 16620
 ggcgaccggc tcgagggtcca ggcgtctgc gcccacccatcg gccaggggccg cgaccggcag 16680
 caaccgcgtt ggctgggttc ggtcaagtcc gtcgtcgcc acacgcagggc ggcacccgg 16740
 gtggccggcg tgcataagat ggtccagtcg ctgcggcaccg ggcagctccc ggcgacccag 16800
 cacgtcgacg cggccacgc gcaagtggac tggtcggccg gagcgtatcg gtcgtcgcc 16860
 gagggccggg agtggccgcg caacggccac cccgcggggc gcccggatctc gtcgtcg 16920
 gccaacgcgcg cgaacgcgcg catgtatccgc gaagaagcgcc cccaggacga gcccgggtacc 16980
 gaagcgccgg cggccacggg tgcgttaccg ctgggtgtt cggggcgccg cgcgtttcc 17040
 ctggccggcc accggcgctg gtcggcgag gtcggcgacg tcccttcggc ggatgtcgcc 17100
 gggacgctgg tgcgtcgcc cgcgtatctc agcgagcgcc cgggtcgatcg gcccggctcc 17160
 cacgaagaag cccgtaccgg gtcggggcg ctggcccgcc gcgagagcgcc gcccggctcg 17220
 ctttccggcc gcccgtcgcc ggtccggggc aagggtcgatcg ggggtttccc cggccaggggc 17280
 acgcagtggg cccgtatggg cccgtcgatcg ctggacttcc cggagggtgtt cggccgcgcg 17340
 atcgccgagt gcgagaccgc gtcggggcg tgggtcgact gtcgtcgac cgacgtcg 17400
 cccggcgagg cccgtatcg ggcaccgggtc gacgtggatcg aaccggcgag cttcgccgt 17460
 atggtcggcc tgcgtcgccgt ctggcccttc ctcggcgatcg agcccgaggc cgtggggcc 17520
 cactcgccagg cgcgcgtatcg ggcgcgtatcg gtcgtccggg cactgtccct ggaggacgc 17580
 gcgaaagggtgg tggcgatcg cagccaggcg atcgccgtt cgcgtcgccgg cccggccggc 17640
 atggcgccgg tgcgtcgatcg cgaagaagac ggcaccggcc ggcgtcgatcg gtggggccggc 17700
 cccgtggagg tgcgtcgccgt caacggggccg acgtccgtgg tgcgtcgccgg ggacgcccgg 17760
 gcgctggacg aaggccctcgatcg cgcgcgtatcg gaccaaggcg tccggatccg gcccggatcg 17820
 gtggactacg cccgtccacac cccgtcgatcg gaagccgcgc ggcgcgtact ggccgagatg 17880
 ctggccggggc tccgacgcgc ggcgcgggaa gtcggatcgact ctcgaccgt gaccggccggc 17940
 tgggtcgatcg acgcggcgatcg gtcgtcgatcg ggctactcgatcg accggaaacct cccgtcgatcg 18000

gtgcggttcg gcccggcggt ggccgagctg atcgagcagg gccaccgggt gttcgtcgag 18060
 gtcagcgcgc atcccgtgct ggttcagccg atcaacgaac tgcgtcgacga caccgaagcc 18120
 gtggtcaccg ggacgctgct gcgcgaggac ggccggctcc ggccgcctgt ggcctcgcg 18180
 gcccggctct tcgtcccgcc cggtgaccgtg gactggtccg gtgtgctgcc accgtccccgc 18240
 cgggtcgagc tgccgacgta cgccttcgac caccagcaact actggctgca gatgggcggg 18300
 tcggccaccg acgcccgtgc gctgggcctg gccggcgccg accaccgcgt gctggcgcg 18360
 gtcgtcccgcc tgccgacgta cgacgggctc gtcttacact cgccgctgtc gctgaagtgc 18420
 caccctgtgc tggccggca cgccgatcgcc ggggtcggtc tcatattccggg cacggtgtac 18480
 gtcgacctcg cgctgcgcgc cggcgacgag ctccggctcg gctgcctggaa agagctcg 18540
 atcgaggcac cgctgggtct gggcgagcgc ggcggcggttc gctgtcaggt cgccgtgagc 18600
 gggccgaacg agaccggctc gcgtgcgggt gacgtttctt ccacatgcggga agacggcgac 18660
 gaatggaccc ggcacgcgcac cggctccctc gggggcgctga cgtcccgggg accgagccgc 18720
 ttgcacttcg ccgcctggcc gccggccggg gccggagccga tcgcacgtcg aaacttctac 18780
 accgaccta cccgagcgcgg gtacgcctac agcggcgctt tccaggccat gcgggcggtc 18840
 tggccggcgcg gtgacgagggt ctccggccag gtcgcgtcg ctgcacgacca cccgaggac 18900
 gccggcaagt tcggcctcca ccccgccctc ctgcacgcgc ccttcgcacac gaacgccttc 18960
 gcgaacccgg acgacgacccg cagtgtgtcg ccgttcgcgt ggaacggccct ggtcctgcac 19020
 gccgtggcg cggtcgccgt gcgggtgcgg gtggcgccgg gccgtccggg cccgcgtgacg 19080
 ttccaggccg cccgacgagac cgggtggctg gtcgtcaccat tggattcggt ggtgtccgc 19140
 gagggtcg gccgcgacgt gggagacggcg gccggcgaag agcgcgactc gctgttccag 19200
 gtggacttgg a tgcgggtccc cggacggcgc accgcggccaa cccgacgcgc cggagggtctc 19260
 gaaggcctcg gcgaggcagc gcccctcgag ctgaccagcc ggggtgcggaa gggccgtgcag 19320
 tcctggctcg cccgacgcggc cggacgaagca cgggttggtcg tgggtgaccgg tggccggcg 19380
 cccgcgggtga cggacccggc cgggtggccgc gtgtgggtt tgggtgcgagc cggccaggcg 19440
 gagaacccgg gccggatcat ctcgtcgac accgacggcg acgtcccgctt ggggtgcgggt 19500
 ctggccagtg gtgagccgca gctcgccgtg cccggcaacg ctttctccgt cccgcgcctc 19560
 gccccggcca cccggcgagggt gccggaggcc cccgcgggtt tcaagtcggaa agggacggtc 19620
 ctgctcaccg gccggcaccgg ctgcgtggc ggtctgggtt ccaagcacctt ggttggccgg 19680
 cacggcgtcc ggcggctgtt gtcgcggcgc cccggaggcg tggccggggaa agacctcg 19740
 accgagctga cccgacgggg cccgacgggtg tccgttggtt cttgcacgt ctccgaccgc 19800
 gaccagggtg cccgcgttgc ggcggaaacac cccgcggaccg gcatcggtcg cctggccggc 19860
 ctgctggacg acggcgatcat cggagccctg aaccgggagc ggctggccgg ggtgttcgcg 19920
 cccaaaggctcg atgcgttcca gcaacctcgac gaactgaccc gccgcacctcg ctcgcacgc 19980
 ttgcgtgtt ttcgtccgc agccgcgtc atgggttcgg cccggccaggaa caactacgcg 20040
 gccgccaacg ctttcctcgaa cggcttgatg gccggggcgcc gccggcgccc cctgcacggc 20100
 gtgtccctgg cgtggggctt gtgggagcgc gccggacggcc tgaccgcgaa ctcagcgc 20160
 accgaccagg cccggatgag cccggcgccgc gtgctgcggaa tgacaccggc cgaggccctg 20220
 gacatctcg acatcggttgc ggcggcccgag caggccctgc tgggtcccgat caagctcgac 20280
 ctgcggacgc tgcgcggcca ggcacccggc ggcggcgagg tgccgcaccc gtcgcgcggc 20340
 ctggtcccgcg cggacccggc cgtgacccgc acggctccgc cggatggcg ggggtggccctg 20400
 gtccacaacgc tcgcggccgc gcaacccggaa gaggcaggaa cccgtgtcgat gggcatcg 20460
 caggcggagg cggccgggtt gtcgggttcc aacggccccc agctggccca gggcacccgc 20520
 ggggtcagcg acctcggtt cgtactcgatg accgcgggtcg agctgcggaa cccggatgagc 20580
 gccggcgaccg gctgtcaaatt gcccggccacg ctcgttccgt actacccgc gccgtcg 20640
 ctcgcggcc acctcgccgcg agacgtggc gagacgggtt cgggtgcgc gggccacgc 20700
 gtgacgaccg tcgcgcacgc gggcgagccg atgcgcacatcg tcggcatggc gtgcgcctg 20760
 cccggcgccg tggatgagccc cggacgcctc tggcggtatgg tggccggagg cccgcgtatgg 20820
 atgtcgccgt tccccggaga cccgggttcc gacctggacg gcctgttcga ctcggacccc 20880
 gagcggccgg gcaacccgcta catccggccaa ggcgggttcc tgcacgggc cgccgtgttc 20940
 gaccggggct tcttcgggat ctgcggccgc gaaaggccctgg ccatggaccc gcaacggcg 21000
 ctgctgtcg aaggcctccgt ggaaggccctg gaggcgcggc gcatcgaccc gaccaaggcc 21060
 cccgggtacg cccgtggccgt ttttcggccgc gtctccatcc acgactaccc cggatccctg 21120
 agcaacatgc cccggcgacgt cggacggctt gtcaccacgg ccacggcgccg cggcgtcgcc 21180
 tcggccggg tggcctacac ctccgggttcc gaggggccgg cgggtcgcgtt gggacacggcg 21240
 tgctcgatcg cgtgggtcgatcc gatccacccgt gccgcacagg cactgcggca gggcgatgtc 21300
 acgatggccc tggccggccgg tggccggatgg atgggttcgc cggatgggtt ctcggatcg 21360
 tcgcggcaggc gccggatggc cggaggacggc cgggtcaagg cgttcgcggc cggcgcggac 21420
 ggcacccgtcc tggccgaagg cgtccggatcc gtcgttccgt aacggcttc ggtggcccg 21480
 gaacgcgggc accgggtgtt cccgggttcc cggccgttcc cggccgcacgc cgggtcaacca gacggcgctc 21540
 tcgaacggcc tggccggccca aacggggccg tggccggatgg cggatggatccg cggcgcgtc 21600
 gccggggccg gactgcaacc gtcggatgg gacgtcgatccg aacgcgcacgg caccgggacc 21660

gcgtggcg aaccgatcg agccccaggcc ctgctggcca cctacggcaa gagccgcgag 21720
 acgcgttgt ggctcggtc gctgaagtgc aacatcgcc acacccaggc ggccgcggc 21780
 gtggcgccg tcatcaagat ggtccaggcg ctgcggcagg acaccctgc gccgaccctc 21840
 cacgtgcagg aacccaccaa gcaggtggac tggtccggcg gtgcggtcga gctgtgacc 21900
 gaaggccggg agtggggccc caacggccac ccgcgcggg ccgggtgtc tcgtttcg 21960
 atcagcgca ccaacgcgca cctcatctg gaagaggcg cccgcacga caccggcag 22020
 gcggacgtgc cgcacgcgt ggtgcccgtg gtatctcg cgccgacac cggatccctg 22080
 gcgggcccagg ccggacgcct ggccggcgta ctcgacggag acgtccccgt gacccgcgt 22140
 gcgggtgccc tgctgtcgac ccggggcgacg ctgaccgacc gggccgtcg cgtggcg 22200
 tcggccgagg aggccccggc gggctgacc ggcgtggccc gggcgagag cgcgagcggg 22260
 cttgtgaccg gtaccgcagg gatccgggc aagacgtct ggtgttccc cggccagggg 22320
 acgcagtggg cgggcatggg ccgggagctc ctgcgaagct ccccggtt cggcgagcgc 22380
 attgaggaat gcgcggccgc gctgcagccg tggatcgact ggtcgctgc ggacgtcctc 22440
 cgtggcgaag gtgagctgga tcgggtcgac gtgcgtcgc cggcgtgttt cgggtgtat 22500
 gtggggctgg ccgcgtctg ggctcggtc ggctgtgc cggacgcggg cctggccac 22560
 tcccaggcg agattgcgcg cgcctgcgtg tcgggtgcac tgccctcga ggacgcagcc 22620
 aaggtcgtcg cgctgcgcag ccaggcgatc gggcgagc tgccggcccg cggggccatg 22680
 gcgtcgatcc agctgagcca cgacgagggt gctgccggc tcgcgcgtg ggccggccgc 22740
 gtcgagatcg cgcgcgtcaa cggccggcc tcgggtgtga tgccgggtga cggcaagcg 22800
 ctcaccgagg ccgtcgaagt cctcgccgtt cggcggtgg cggtggtacta cgcgtccac 22860
 acgccccacg tcgaggacat ccaggacacc ctcgcgaga ctctggccgg gatcgaecgc 22920
 caggcccccg tggtgcctt ctactccacg gtcgcggcg agtggatcac cgtgcgggg 22980
 gtcgtcgacg gccccgtactg gtaccggaa ctgcgaacc agtgcggctt cggccggcc 23040
 gtggccgagc tgatcgagca gggcacggg gtgttgcgt agtgcgtgc gatccgggt 23100
 ctggtgccgcg cgatcagcga gctcaccgt gctgcgtca cgggacgtt gcccgcgcac 23160
 gacgggtgggg tgcggcggt gctgacctcg atggcogaac tttcgcccg cgggtccccc 23220
 gtcactggg ccacgatggc gcccggcg cgcgtcgac tgccgcaccta cgccttcgac 23280
 caccagcaact tctggctcag cccggccgcg gtggcgacg cggccgcgtt cggccctggcc 23340
 ggcgcgacc acccgctgtt gggggcggtt ctccgcgtc cgcgtccga cggccctgg 23400
 ttcacccctcgc gctgtcggt gcgacgcac cgtggctgg cggacggcg cccggccgc 23460
 gccttggtgg agctggccgt gccccgggt gacgaagccg gtggcccggt ctcgcgcac 23520
 ctgaccgtcg aaaagctgtt ggtgtcgccg gagagcggt gctgcgcgtt ccagggtatc 23580
 gtgagcgccg agcgcacggt cgagggttat tcgcagctcg aaggcgccg agactggatc 23640
 cggAACGCCA cccccaccc gtcgcacccg gtcgcgcgc acgaggccct cgaacttcacc 23700
 gcctggccgc cccgggagc ccagcagggt gacggctt ggcggcgccg cgcgcgcac 23760
 ttcgcccagg tgcgcctgca ggaggagctg gacgcggcg cgttcggcat ccacccttc 23820
 ctgctggacg cggccgtcga gcccgtctc gcgacgcacg agcagccgc ggagtggcgc 23880
 agccttggcc tgcacgcgc ggggtcgctcg ggcgtcgacg tgccgtcggt gcccggcg 23940
 gccctccaag cggcgacga aacccggggg ctggctctca cggcgattt ggtggcaggc 24000
 cgggaactct cggccggaa gacccgcgcg gatcgctgt accgggtcgta ctggaccgaa 24060
 gtgtccattt cagacagtgc ggtgcggcc aacatcgagg tgcgtcgaa cttcggtgaa 24120
 gagccccctgg aactgaccgg cccggtcctg gaggctgtgc agacctggct cgtcaccgcg 24180
 gcccgcgtcg cggcgctgtt cgtggtgacc cggcgcccg tgccgcgggt gaccgacccc 24240
 gcccgtgcgg ccgtgtgggg cctggtcgca gccgcgcagg cggagaaccc cggcgcac 24300
 ttcctgtatcg acaccgacgg cgagatcccg gcccgtacccg gtacgcgaccc cggatcgac 24360
 gtgcgcggcg ggaagtttt cgtccccgc atcactcg cggagccgag cggggccgc 24420
 gtgttccgcg cggacgggac agtgcgtgatc tggcgccgg tgccgtcg tggccctgg 24480
 gccccgcgtc tcgtcgaaacg ccacggcgatc cggaaagctcg tgctggcgatc cggcgcggc 24540
 cggacgcgcg acggcggtgc ggacctggc gcccgcctgg cggcgacgt gtcgcgtgt 24600
 gcttcgcacg ttcgcgtatc cggccagggt gccgcctgc tcgcacgcac cggcgcgacc 24660
 gcccgtgtgc acaccgcgg cgtcatcgac gccggcgatg tgcacgcgtt ggaccgggac 24720
 cggctggcca cgggttcgc gcccgaaggc gacgcgcgtc ggcaccccg cggatcgacc 24780
 cgcgaccgcg acctcgacgc ttctcgatc tactccctgg ttcggccgtt gttcatggc 24840
 cggggcagcg ctagttacgc cggcgacac gcttcctgg acggcctgtt ggcgaaccgc 24900
 cggcgccggg cctgtcgatc cggcggtggcc tggggacca gaccccggt 24960
 atggccgcgg gcaccgacga ggcaccccg ggcggatg ggcgcgcgg tggccgtcag 25020
 atcatgacgc aggccgaggg catggacctg ttcgcacgcg cgtgcgtc ggcgcgtcg 25080
 ctgcttggtc cggccaaatc cggatcgatc ggggtcgatc cggacgcgcg cggcgccgg 25140
 gtcgtgcgc acatgctcg tggccgttgc cgcgcggcc gggcgacgg cggcgccgg 25200
 tccactgtgg acaacgggtt ggcggacgg ctggccggcc tgcgcggcc gacccagctc 25260
 acgctgctcc tggacctgtt cggggcgac gtcgcggccg tgctcgccca cggcgcacgc 25320

agcgcgggtcc gctcgacac ggcattcaag gacgcccgtc tgcactcgct gaccgcggtc 25380
 gagctgcgca accgcgtcg gaccgcccacc ggcctgaagc tgcccgcgac gctcgcttcc 25440
 gactaccggc acccccaggc gctcgcccg cacctgcgac acgaactcggt tggtgcggcc 25500
 cagacgcggc tgaccacaggc ggccgcgaag gccgacctcg acgagccgat cgccatcgta 25560
 gggatggcggt gccgcttgcc gggcggggtc gccggggcccg aggacctctg gcggctggtc 25620
 gccgaggggcc gggacgcggt gtgcagctt cgcaccgacc gcggctggga caccgacagc 25680
 ctgtacgacc cgcgtccggc ccgccccggc aagacctaca cccggcacgg cggcttcctg 25740
 cacgaagccg ggctttcgaa cgcgggttcc ttccggatct cgccacgcga ggccgtcgcc 25800
 atggacccgc agcagcggt gctgctggag gcctcttggg aggccatggg agacgcgggg 25860
 gtcgacccac ttccgctgaa gggcaacgac gtccgggtgt tcacccggcat gttcggccag 25920
 gttacgtcg ctcccggggaa cagcgtcgta acgcccggac tgagggttt cgccggcacg 25980
 ggcgggtcggt cgagtgtcg gtcggccgc gtgtcgtagc ttccgggtt cgaaggccc 26040
 gccgtgacga tcgactcgcc gtgcgtgtcc tcgctggcg cgatgcaccc cgccgcgcag 26100
 tcgctgcggc agggcgagtg ctgcgtggcc ttggccggcg gecgcacgg gatggcgaac 26160
 cccggcgcat tcgtggagtt ctgcggcag cggggcctcg cgcgtcgcacgg tcgctgcag 26220
 gcgttcgccc cgcggccgaa cggcacccggc tggccgagg gcgtcggtgt ggtcatcctc 26280
 gagcggctgt cggtgtcg gaaacgcggc caccggatcc tgccgtgt gcgcggcagc 26340
 gcggtcaacc aggacggcgc ctgcgtggcc ctgaccgcgc cgaacggggcc gtcgcagcag 26400
 cgggtgatcc gccggggcgct ggtgagcgcc gggctggcac cgccgtatgt ggacgtcg 26460
 gaggcgcacg gcaccgggac cacgctgggt gacccgatcg aggccgcaagc tctgtggct 26520
 acctacggca aggaccgcga gtccggcgtg tggctcggt cgctgaagtc gaacatcgcc 26580
 cacgcgcagg ccggccgggg ggtcggccggc gtcatcaaga tggtccaggc gtcggccac 26640
 gaagtccctgc cgccgacgt gcacgtcgac cggccctaccc cggaggtcgta ctggtcggcc 26700
 ggtgccgtcg aactgctgac ggaagccgcg gagtggccgc gcaacggggc cccgcggcc 26760
 gccgggggtct ccgcgttcgg cgtcagcgcc acgaacgcgc acctgtatcc ggaggaggcg 26820
 cccgcccgaag agccgggtgcc cacacccggag ttcccttgg tgccggcgt ggtctcccg 26880
 cggagcaggc cgcccttggc cggcaggccg ggtcgccctcg cggattcgt ggcgggtgac 26940
 gcgtcccttgg ccggtgtggc ccggccgctg gtacgaaacc gggccgcgt gaccgagcgc 27000
 gcggtcatgg tcgtgggtcc tcgcgtaa gccgtgacga acctggaaagc gtcggccgc 27060
 ggcgaagacc cggccggcggt ggtcaccggc cgggggggtt cgccgggcaa gtcgtctgg 27120
 gtcttccccg gccagggtctc gcaagtggatc gggatgggc gggaaactccct ggactcttcg 27180
 ccggtcttcg ccgagcggtt cgccgtatgc gccggccccc tggaaaccgtg gatcgattgg 27240
 tcactgctcg acgtgctcg cggggagtc gacctgttgg accgggtcgta cgtcgtcgag 27300
 cccggcagct tcgcgtatgtat ggtcggctcg gccgtgggtt ggcagtcgtt ggtgtccgc 27360
 ccggatgccc tcgtcgccca ctgcgtggcc gagatcgccg cccctgcgt ctcggccgc 27420
 ctgtcgctgc aggacgcgcg gaagggtggt gccttgcgc gccaggcgat cgccacccgg 27480
 ctggccgggc gccggcgcat ggcttccgtg gcgttgagcg aagaagacgc gaccgcgtgg 27540
 ctggccggcggt gggccgaccg ggtccagggt gccgcgggtca acagccctgc ctccgtgg 27600
 atcgccgggg aagcccgaggc cctcgacgag gtgcgtcgac cgttgcggcc tcaggaagtc 27660
 cgcgtccggc gggtgtccgtt ggactacggg tcccacacca accagggtcg agcacatcgag 27720
 gatctgctgg cgcagaccc ttccggcatac gaggcgccagg ccccgaaagg gcccctctac 27780
 tcgaccctga tcggtgactg gatccgtgac gccgggatcg tgcacggcggt ctactggta 27840
 cggAACCTGC gcaaccaggc cgggttcggc cggccgtcg cggagctcg tgcggccaggc 27900
 cacgggggtt tcgtcgaggc cagcgcgcac cgggtgttgg tccagccgt cagtgaactc 27960
 agcgcacgacg cgggtgtcgac cgggtcgctg cggcgcgaag acgggtggccat ggcggccctg 28020
 ctgacgtcgat tggccgaggc tgcgtcgac ggtgtccgc tcgactggac cgcggccctg 28080
 cccgggaccg gccgggtcgat cctgcgtaa tgcgttcgc accaccggca ctactggctg 28140
 cggccggcccg agtccgcgcac cgcacgggtt tcgctggccagg gggccggccgc gaccacccgg 28200
 ctgtcgccggc cgggtcgatc gtcggcccgat tccgacggcc tgggtgttccat ctcggccgt 28260
 tccgtcgatc cgcacccgtg gtcggccgcac cgcacgggtcg tgggtgttccat catccctcccc 28320
 ggctccgggc tggccgaaact ggccgtccgg gccggccgac aaggccgggtt caccggccctc 28380
 gacgagctga tcacgtcgat tccgctggc gtcggccggcc aaggcgccgtt cgcgtccag 28440
 gtcgcgttgc gccggccggc cggacccggc tcgcgtcgat tggacccctcg ctcccgacgc 28500
 gacggccggcg cggggacgtg gacgcggcacc gccaccggcg tgcgtcgac gggccggccgt 28560
 caggaaccccg agttcgactt ccacgcctgg cggccggcgat atgcgcggcg gatcgacgtc 28620
 gagacccctt acaccgaccc ggcgcggcgat gttacgggtt acggggccggc tttccagggg 28680
 ctgcaaggcg tggccggcgat tgcgtcgac gtcggcccgat aggtcgccctt gcccggaggac 28740
 ctgcgtcgatc acgcggccgg gttccggcgtc caccggccgc tgcgtcgacgc ggcgtcgac 28800
 gccgcccacgg ccgtggccgg cgcacggccg ggtcagccgg tgcgtggcgat cgcgtggaaac 28860
 ggcctgggtcc tgcacgcgcg gggcgccgtcg gccctgggg tccggctcg gccgagccggc 28920
 ccggacacgcg tgcgtcgatc acgcggccgac gaaaccggcg gttccggccat gaccatggaa 28980

ccggcggccgt ttcggccgag cagctggcg ccggggccga cgccccccac 29040
gacgcgatgt tccgcgtcga ctggaccgag ctgcctgccg tgccccgcgc ggaactgccc 29100
ccgtgggtgc ggatcgacac cgccgacgac gtcgcccctt tggcggagaa ggccgacgca 29160
ccaccgggtgg tggctggga agccggcggg ggagacccgg ccctggccgt gagttcccg 29220
gtgctcgaga tcatgcaggc ctggctggcc gcgcggcggt tcgaggaggg cggctggtc 29280
gtgacgaccc gcccgcggg acccggccgc ggtgaccaca cactgaccga cccggcccg 29340
gcccgggtgt gggcctggg ccggtcccgccg caggcggaaac acccggaccg gtcgtccctg 29400
ctggacaccg acggcgaagt tccgcggcgc gcggtgctgg cctccggta gccgcagctc 29460
gcgggtgcgcg gaacgacggtt ctgcgtgccc cggctggccc ggcaccccg gctctcgac 29520
gcgcctcctg cggtcgaccc ggacgggacc gtgctggct cgggcggccg atcgctggc 29580
accttggtgg cccggcacct ggtcaccggg cacggcgtgc gccgggtgg gctggccagc 29640
cggcaggggcc gggacgcccga gggcgcccg gacctgatca ccgagctcac cggcgaaggc 29700
gcggacgtgt cttcgtggc ctgtgacgtc tccgatcgcc accaggtggc cgcgctgctc 29760
gcgggcctcc cgacgtcgac cgggggtggg cacaccgccc gcgtcttcga ggacggcg 29820
atcgaggcgc tgaacggccga ccagctcgcc aacgttacg cggccaagggt cacggcccg 29880
atgcaccccg acgagctcac cccgcggccg gatctggcg cgttcgtcgt gttctccctc 29940
gtcgcggggg ttagtgggtgg tggcggtcaa ggccgtacg cggcggcgaa cgccttcctg 30000
gacgcggcga tggcgagtcg tcaggcccgcc ggcctggccg gcctgtccct ggcgtggggc 30060
ctctggaaac gcacgcggccg catggccgccc acctcagcg aggtcgaacca cgcgcggggc 30120
agccgcaacg gtgtcctggg actgaccggg gcccaggggg tggcgctgtt cgacccctcgg 30180
ctgcggatgg cccagtcgtc gtcgtgccc atcaagctcg acctcgcgcg gatgcggggc 30240
agcacggtcc cggtcctgtt cccggccctg gtccggccga gccggaccca ggcgcgcac 30300
gcgtccactg tggaccgggg gctggccggg cggctcgccg ggctggccgt ggcggagcgg 30360
gcggcgggtgc tggtcgaccc ggtgcggccg caggtcgccc tcgtgtcgg ctacgacggg 30420
ccggaggccg tccgcccggg cacggcgttc aaggacaccg gttcgactc gtcgacgtcg 30480
gtggaaactgc gcaacccggct ggcggaggccg accgggtcta agctcccgcc acgcgtcgtc 30540
ttcgactacc cgaacccctt ggcgggtggc cgctacctgg gcgcgcggct ggtcccgac 30600
gggaccgcga acggcaacgg gaacgggaat gggcacagcg aagacgaccg gtcgcggcac 30660
gcgcgtggcg ccatcgccgc cgaggacgcg ggcggaggagc gtcgatcgc gacccctggc 30720
gtcgacgacc tcgtgcaact ggcttcggc gacgagtat tggggcaagt ggtgagtgcg 30780
tcgtatgaaa aggtcgctga ggcgctgccc aagtgcctcg aagaggtcgg cacgctgaag 30840
aagcggaaacc ggcagctcgc cgacggggcc ggcgagccga tcgccatcgt cggcatggcc 30900
tgccggctgc cccgtggcgtt caccggggccc ggtgacctct ggcggctgg ggcggagggc 30960
ggcgcacccg tctcggggtt cccaccgac cgctgctggg acctggacac cctgttcgac 31020
ccggatcccg accacgcggg gacgtcgtac accgaccagg gcggcttcct ccacgacgcg 31080
gccttggtcg acccggtt cttcgggatt tcgcccggcc aggcgttggc catggacccg 31140
cagcagcggt tgcgtctggg ggcgtctggg gaggcgttgg aaggtgtcg gctcgacccg 31200
gcctcgttgc agggcaccga cgtcggcggt ttccacggc gggggggc gggctacggc 31260
ggcggcctca cccggccggg gatcgaggt ttgcgggca cccggctggc ctcgagcg 31320
gcctcgggccc ggggtgtctta cgtcttcggg ttgcgggac cgggggtcac gatcgacac 31380
gcgtgtcggt cggtcggtt ggcgtatgcac ctgcggccgc aggccctgcg ccaaggcgc 31440
tgctcgatgg cactggccgg cggcgcgtat gtatgtcg gccccactc cttcgtcgtc 31500
ttctcccgcc agcgggggctt ggcaccggac gggcggttgc aggcgttgc gtcggcgcc 31560
gacggcatgg tgctcgccga gggcatcgc gtggcgatgc tggagcggtc ttcggtcg 31620
cgggAACCGC ggcaccgggt gtcggcggtg ctgcggccga ggcgggtgaa ccaggatggc 31680
gcgtcgaacg gcctgaccgc cccgaacggc cttcccgac agcgcgtat cgcgcggcg 31740
ctggccaacg cccgaatcgg accgtccgtat gtggacctcg tcgaggcgca cgggaccgg 31800
acgagccctgg gtatcccat cgaggcgcag gccttgcgtt cgacccatcgg ccaggacccg 31860
gagacggcgt tggcgatcg ctcgcgtaa tcgaaatcg ggcacacgc ggcggcccg 31920
ggcgtggcga gctgtatcaa ggtcgatcg ggcgtcgcc acggcgat ggcggccacc 31980
ctgcacgtcg acgagcccgat ctcgcaggat gactggatcc aaggcgcgg ggaactgtcg 32040
accggagcc gggactggcc ggcgggggac cggccgcgc gggccggggt gtcgtcg 32100
ggcgtcagcg ggacgaaatgt gcacccgtat atcgagggaaat ccccgagga gcccgtcg 32160
ccgtggccga cgtccgcggg cgtcgatcg ctggcggtt ccgcacgcag cacgggttcc 32220
ctggccggcc agggcaccgg gtcgaccggat gtggacgtcc ccctcgac gtcggccgg 32280
gcgtgtgggg cccggccggc ggtcgatcg gacgcggcc gtcgtcg ggggtcg 32340
gaagaagccc ggcgggggctt gggcgatcg gtcgcgggt aagccgcgc cggcgtcg 32400
accggagcc gggcaagcc gggcaaggat gtctgggtt tcccgac ggggacgcag 32460
tgggtggcga tggcgccgggat gtcctcgat gcgtcccccgg tggcgatcg gtcgtcg 32520
gagtcgcggc gggactggcc ctcgcaggat gactggatcc gtcgtcg gtcgtcg 32580
gacggatcgat tggattctgt cgaggatcg cagccgcgt gtcgtcg gtcgtcg 32640

ctggccgcgg tctgggagtc ggccggggtc cggccggacg ccgtcgctgg ccactcgcag 32700
 ggcgagatcg ccgcggcctg cgtgtccggc gcgcgtcaccc tcgacgcacgc cgcaagggtg 32760
 gtggccctgc gcagccaggc gatcgccggc cggctgtccg gccgcggcgg gatggcgctg 32820
 gtcgcgttga gcgaggacga ggcgaacgcg cggctgggtt tgtggacgg cggatcgag 32880
 gtggccgcgg tcaacggccc cgcctccgtg gtatcgccg gggacgcaca agccctcgac 32940
 gaggctttgg aggtgctggc cggggacggc gtccgcgtcc ggcaggtcgc gtcgactac 33000
 gcctcccaca cccggcacgt cgaggacatc cgcacaccc tcgcccggac gctggccggg 33060
 atcaccgcgc aggccccggc cgtgccgttc cgctccaccc tcaccggcgg ctgggtgcgg 33120
 gacgcccacg tcctggacgg cgggtactgg taccgcaacc tgcgcaacca gttccgggttc 33180
 ggcccgcccg tggccgagct gctcgagcag gcccacgggg tttcgctcg gtcagcgcc 33240
 cacccccgtgc tggtgacgac gatcagcgag ctcaccgcac cggtcgtcac cggacgctg 33300
 cggcgcgacg acggcggcct gcgcgcgtg ctgacgtcga tggccgagct ttgcgtccgc 33360
 ggtgttcgcg tcgactggc cacgctggt cgcgcgtg gctggaccc cccgacgtac 33420
 gccttcgacc accagcatt ctggctccgg cggccgcgc aggcggacgc cgtctcgctc 33480
 ggccaggccg cggcggagca cccgtgtc cgcgcgggtcg tccggctgcc qagtcggac 33540
 ggcttgcgtc tcacctcgcg gctgtcgctg cggacgcacc cgtggctggc gaccacacc 33600
 atcggccgcg tggtgctgtt ccccgccacc gggctggtc aactggccgt gcccggccggc 33660
 gacgaggccg ggtcccggt cttggacgaa ctcgtgaccg aggcggccgt gtcgtgccc 33720
 gggcaggccg gagtgaacgt ccaggtcagc gtgagcggcc cggaccagaa cggcttcgc 33780
 acggtgaca tccactcca gcgcgacgac gtgtggaccc ggcacgcac cgaacaggc 33840
 tcggcgaccc cggcgcacg ccccggttc gacttcaccc tggccggcc gccggacggg 33900
 cagcgcgtcg agatcgccg cttctacgac gacctcgccg agcgcgggtt cgcgtacggg 33960
 cccttgttcc agggcgtcg ggcgggtgtgg cagcgcggcg aagacgttgt cgccgaggc 34020
 ggcgtcccg aagaccggc ggaggacgac gcccgggtcg gcctgcaccc ggcgttgctg 34080
 gacgcggccc tgcagaccgg gacgatcgcc gcggccgcgt cggtcagcc gggcaagtcc 34140
 gtgatgccgt tctcggtgaa cggcgtggcg ctgcaccccg tcggggccgc ggcctccgg 34200
 gtccgcgtgg ccccgccgg accggacgcg ctgaccgtcg aggcgcgcga cgagaccggc 34260
 gccccggtcc tcaccatggc ctcgtgtatc ctgcgtgaag tgcctcgac ccagctggac 34320
 actgcgcgcg cggcgtcgct taccgggtg gactggacgc cactgcccac tggacagatg 34380
 gcggtcccg ctggtcggc cggaggtctg gaagcttgc gcgaggagcc cttggacactg 34440
 accggccggg tgctggccgc ctcgtcaggcg tggcttccg acgcggccga ggaagccgc 34500
 ctggtcgtgg tgacccgggg tgcgggtccc gcccggagacg gtgtggtag cgatccggcg 34560
 ggtgccgcg tggggggct ggtccggggc ggcggcggcg agaaccggc cgggttcgtc 34620
 ctgtcgaca cgcacggcga ggtgcggctg gaagcgggtc tggcgaccgg tgagccgcag 34680
 ctcgcgtgc cggcgcacgac gttctcggtg ccccggtctg cccgcgtcac cgaaccggc 34740
 gaagccccgc tgacgttccg tccggacggg acggctctgg tctccggcgc cggacgctg 34800
 ggtgcgtcg cggcccgcgca ctcgtcacc cggcacggcg tccggcggtc cgtgtggcc 34860
 agccggcgcg gccggccgc cgaggccatc gacgacctcg tcgcccggact gaccgggcac 34920
 ggcgcccgaag tgacggtcgc cgcctgcgac gtctccgacc gcgaccagg ggcggcgctg 34980
 ctcaaggaac acgcgtcgac cgcgtgtgtg cacacggcg gctgttcga cgcgggtgtc 35040
 accggcgcgc tgacccggga cggcgtggcc aagggttgc cgcccaagg cgcgcggcc 35100
 aaccacctcg acgagctgac cgcgcacctg gacctcgacg cttcatcg ctactcgatc 35160
 gcctcctcg tcttcatggg cgcgggcgcg ggcgggtacg cggcggcgaa cgcctacctc 35220
 gacggcctga tggccggccg ggcgcggcgc ggcctggccg ggctgtcgct ggcctggggc 35280
 ccgtgggagc agctcaccgg catggccgac accatcgacg acctcaccct gcccggatg 35340
 agccggcgcg aaggccggc cggcgtccgc gcgcgtcgct cgcgcacgg catggagctg 35400
 ttcgacgccc cgtcgccgc cggcaggcg ctgtgggtc cgcgtcgact cgcgtcgac 35460
 gaggtgcggg cgcacgcgc cggcggcgc acggtgccgc acctgtcgac cgggtggtc 35520
 cgcgcggggcc ggcaggccgc gggacggcg gccaccggagg acggccggct ggaacggcgg 35580
 ctggccgggc tcaccgtggc cgaacaggaa gcgcgtcgct tcgacccgtc cgcgggtcag 35640
 gtcgcgtcg tgctcggtc cgcgcacgc tccggcgatc ggcgcacgc ggcgttcaag 35700
 gacgcccgggt tcgactcgatc gacgtcggtg gagctgcgc accggctcgac cgcacgcacc 35760
 ggcctgaaac tgcccgcgac gctggtcttc gaccatccga acccgctggc actggcccg 35820
 cacctgcggg cggaaactcgac cgtcgacgc gcatccccgg cgcgtcggt gtcggccggg 35880
 ctcgcgggc tggaggccgc catcgccggcc gcccggccccc cggacggcgac cggatcacc 35940
 ggcgcgtgc gggaaactcgac caaggccgcg gaggccggcc agggccggcc gggcacctcc 36000
 ggcgatctcg acacggccag cgcacggaa ctgttcgcacc tcgacgcacgg gtcgactga 36060
 aaccgcgtgt acatccgggg ctgcgcacc cggcccccga aaagcaagca cactgtgagag 36120
 ttctggagtg tggatcgatc ggctgcacgc ggacaactcc ggcactaccc caagcggggcc 36180
 atcggccacg cccgcacgc cgcacgcgg ctgcgcgagg tcgaggagca ggcgcgggag 36240
 cgcacgcacc tcgtcgccat ggcgtccgg taccggccg ggggttcctc gcccggaggac 36300

ctgtggcgcc tggtgtccga ggggaccgac gccgtctccg cttccccgg cgaccgcggc 36360
 tgggacgtcg acgggctcg cgacccggac cccgaccgac cgggcacgac gtacacggac 36420
 cagggtggct tcctccacga ggcggccctc ttgcacgcgg gtttttcgg gatctcgccg 36480
 cgggaggccg tcgcgatgga cccgcagcag cggctgtgc tgagagacgtc ctgggaggcc 36540
 atcgaacgcgca cccgcaccga cccgcgttcg ctgaaggcgca gcacatcg cgtctcacc 36600
 ggcgtcgca gcatgggtta cggcgccgg ggcggcgtgg tcgcgcccgg gctggagggt 36660
 ttcgtcgca cccgtgcggc gccgtgcata cgtccggcc ggtgtcgta cgtcctcgcc 36720
 ttcgaaggcc cggcggtcac cgtcgacacc ggtgtcgta cgtcgctggt ggcgtgcac 36780
 ctgcgcgcgc aggcgctcg gccccgtgag tgctcgatgg ctctggccgg cggcgcgatg 36840
 gtatggccc agccgggttc ttctcgccg aacgcgggtc cggccctggac 36900
 gggcgctgca aggcgtttc ggacagcgcc gacggatgg gactggccga gggcgctcgcc 36960
 gtcatcgccg tggaaacggct gtcggtcgca cgtgagcgta ggcaccgggt gctggccgtg 37020
 ctgcgcggtt tcgcgggtaa ccaggatggc gcgtcaacg gttgaccgc cccgaacggc 37080
 ccgtcccagc agcggtgtat cccgcggccg ctggccgaag cccggctgtc gccgtcccgat 37140
 gtggacgcgc tcgaaggcgca cggacggggc acgacgctgg gcatcccgat cgaagcgac 37200
 gcgttgctgg ccacctacgg caagggccgg gacccggaga agccgtctg gctggctcg 37260
 gtgaagtgcg acctcgggca cacgcaagcg gccgcggggc tggccagcg gatcaagatg 37320
 gtgcaggcgc tgcgccacgg cgtctcgccc ccgacgctgc acgtcgaccg gccgtccacc 37380
 gaagtgcact ggtcgccgg tgccgtctcg ctgttgcacgg aggtcgaaa gtggccggc 37440
 gaaggcgccg cgcgcggggc cgggtgtcc tcgttgcggg tcaagcgac caaccgccac 37500
 ctcatctgg aggaagcgcc cgaggaggag ccgcggctcg ccgaagcgcc ttccggccga 37560
 gtggtgcggc tggtggtgtc ggctcggtgg gccctggccg gtcaggccgg cggctggcc 37620
 gcgttcccg aggcgccgca cgagccgtt gtagccgtcg cccggggcgat gatctcgccg 37680
 cggtcccgt tcggcgaccc ggccgtcg gttgcggggca cgcgcgcaga ggcacggcc 37740
 gggctggccg cgctggcccg cggcgaaagc gccgcggacg tggccggggc cacggcgcc 37800
 gcctcgccgc tgccgggcaa gctcggtgg gtgttcccg gccagggttc gcaagggtg 37860
 ggcattggcc gggagctct cgaaggcctcg ccgtgttcg cgcgcggat cgcggagtgc 37920
 gcggctgccc tcgaaccgtg gatcgactgg tcgtctcg achtccctcg tggcgagggc 37980
 gaccccgacc gcgtcgacgt ggtgcagccc gcgcgtttcg cggatgggat cggccctggcc 38040
 gcggtggtgt cgtccgtcg ggtggtccc gacgcgggtc tcgggcactc gcaaggggag 38100
 atcgccgcg cgtcgctgtc gggggcggtt tcgtcgacgg acgcggcgaa ggtgtcgcc 38160
 ttgcgcagcc aggcgatcgc ggcaagctg gccggccgc gccgcattggc ctgcgtcg 38220
 ctgagcgagg aagacgcggt cgcgcgggtt cggcactggg cggaccgggt cgagggtggc 38280
 gcggtcaaca gcccgtcg ggtgggtatc gcccggacg cccaaaggccat cgcaccaggcc 38340
 ctcgaagcac tgaccggcca ggacatccgg tccggccggg tggccgtggg ctacgcctcg 38400
 cacacccggc acgtcgaaaga catccaggag cccctcgccg aggcactggc cggatcgag 38460
 ggcgcacgcgc cgaccctgca gttttctcg accctcaccg gtactggat tcgcgaagcg 38520
 ggcgtcggtt acggcggtca ctgttaccgg aacctcgca accaggctcg tttcgcccg 38580
 gcggtggccg agctgctcg cctcgccac cgggtgttcg tcgaggctcg cgcgcacccc 38640
 gtgtcgctcc aggcgatcag cgcgtattgc gacgacaccg acgcggctcg caccggctcg 38700
 ctgcggcgccg aggaggccgg cctcgccgg ctgtcgacgt cgatggccga gctgttcgtc 38760
 cgcggagtgc acgtggactg ggcacacgt gttccggccag cgcgggtcg tttccggacc 38820
 tacgccttcg accaccagca ctactggctg cggtaatcg agaccgcac cgcgcggcc 38880
 ggtccgggtgg tccggctgca gcaacggggc ggcctgtct tcaccaccg gttcgctcg 38940
 aagtcaacagc cgtggctggc cgacacacc ctggaaagacc tggtcgtcg cccggccgc 39000
 gcaactggcg agctggccgt cggggccgg gacgaggccg ggaccccggt gctggacgaa 39060
 ctcgtcatcg agacgcaccc ggtcgctcg gacgcggccg cgcgcaccc cgcggatcg 39120
 gtgagcgacg cggacgacgg cacacggacc ctggaaatgc attcccgacc cgaagacgcc 39180
 accaccaaat ggacccggca cgcacccggc acgtcgccg cgcacccggc cggaaaggc 39240
 gggttcgact tcacggctg gccggccccc ggcggccggc acgtcgacgg cttccggcc 39300
 atctggcgcc cggcgacga gatcttcgca gaaatcgatcc tggccgacga tgcggacgcc 39360
 gagggcattcg gcatccaccc cgcgtctctg gacgcggccc tgcaccccg cctgcggcc 39420
 gatgacggtc tgacgcacgc catggaaatgg cgtggctcg cgcgcacgc cgcggggccg 39480
 tcgacgctgc gggtccggg ggttccctgg aacgcggccg cggcgccggc 39540
 agcctggctg tcacggcgaa ggagggttgc ctcggccgg tgcgtcgcc cgcggatcg 39600
 accacccaccg gagactcgat gttcccgatc aactggatcg acgtgcggccg gatgtggcg 39660
 gtggccggccg cagacgacac cgagggtcg gagggtccgg cgggcgattc cccgcggcc 39720
 gcaacccccc gatgtttggc gcggtcccg acgtggctga cgcgcggccg ggcggaaacag 39780
 ctggtcgtcg tgacgcgcgg cgcgtcgccc gccggggaca ccccggtgac cgcacccggc 39840
 gcgccggccg tctggggcct ggtccgggtcc ggcgcaggccg agaaccggc cggatcg 39900
 ctgctcgaca cgcacggcga agtcccgatc ggtgcggatc tggccggccg cggacccggc 39960

gtcgcgggtgc gcggcacggc gctgtacgta ccgcgcctgg cccgcgcggc cgccggccccg 40020
 gtatccgggtc tacatgggac ggtcctcgta tccgggtccg gtgtgtctgg cgagatcgta 40080
 ggcgcggcacc tggtcaccccg ccacggcgta cgcaagctgg tgctcgccag cggccgcggc 40140
 ctggacgccc acggcgcgaa ggacctcgta accgaccta cccggcgaggc cgccggacgtg 40200
 tccgtcgta cctgcgaccc gggcgatcg aaccagggtgg cccgcgtctg gggcgaccac 40260
 cggccggcga gctcatcca cacggcgggc gtcctcgacg acggcgctcat cgggacgctg 40320
 accccggagc ggctggccaa ggtgttgcg cccaaaggctg acgeggctccg ccatctcgac 40380
 gagctgactc ggcacctcgta cctcgacgca ttcgtctgt ttcctccgg ctccggcgta 40440
 ttccgggtcgta cggggcaggc caactacgca gggcgaaacg cgttcttgta cgccggcgatg 40500
 gcgagccgccc ggcggcgccc tcttccttgt ctctcgctgg cgtggggcct gtggaaacag 40560
 gccaccggca tgaccggcga cctcgccggc accgaccagg cccggatgag cggggcgccc 40620
 gtgcggccga tcacggccga ggaaggcatg gcccgttgc acacggcaact gggtgccag 40680
 cccgcgtgc tcgtgcgggt caagctcgac ctgcgggagg tgccggccgg cggggccgtg 40740
 cccgacactgc tgccggggct ggtccggggc gggcgccggc agggccaaagc cgcgtccaca 40800
 gtggacaacc agctgttggg cccgttggcc gggctggggc cggccggagca ggaggcgctg 40860
 ctcgtcgacc tcgtgcgcgg ccagggtcgca gccgtgtctg ggcacggccgg gccggacgca 40920
 gtccgcgcgg acacggcggt caaggacgca gggttcgact cgctcacctc ggtcgacactg 40980
 cgcacccggc tgccggagag caccggcgta aagctgccc cccacgtcgca ttctcgactac 41040
 ccgaccccgc tggtcctcgca cccgcacccgt cgtgacgacg tccggggccgg cgacgacgca 41100
 ctccgggtgg tgcacgcgcg gctcgaagac gtcgaggcgc tgctcgccgg gtcgcccctc 41160
 gacgaatcca cgaagaccgg tctcaccctc cggctgcagg gcctggtcgc cgggtgcaac 41220
 ggcgtgaacg accagaccgg cggcgaaacg ctggcgacc ggctcgaggc cgcgtccggc 41280
 gacgaagtcc tcgacttcat cgacgaggag ctgggttctca cctgaccccg ttctcgagacc 41340
 gacgttcccg caacccttgt gaggaccgcga gaatggccac ggacgagaaa ctccctcaaat 41400
 acctcaagcg cgtcacggcg gagctgcaca gcctgcgcaaa gcagggtgcg cggcacgccc 41460
 acgagccgtc cgcgtcgta gggatggcct gccggttccc ggggtgggtg ttctcgcccg 41520
 aagacctgtg ctagctcgta gccggcgggg tcgacgccc ttcggacttc cccgacgacc 41580
 ggggctggga gctggacggc ctgttcgacc cggaccccgaa ccaccccggg acgtcgata 41640
 ccagccaggc cggcttccgt cgtggcgccg ggctgttgcg cgcgggcctg ttccggcatct 41700
 cgcgcgcga ggcctcgta atggaccgcg agcagcgggt gctgtggag acgtcggtgg 41760
 aggccctcgta agacgcccgg gtcgacccgc tttcgctgaa gggcagcgcac gtcggcggt 41820
 tctccggcgta ttccaccccg ggctacggcg cgggggcgt cacgcggcgc ctcgaggcgt 41880
 tcgcggcgat cggggcgccg tcgagcgtgg cgtcgcccg ggtgttctac gtcttcggc 41940
 tcgaaggacc ggcggteacc atcgacaccg cgtgttgcgc gtcgctgggt gccatccacc 42000
 tcgcgcgcga ggcctgcgc gggggcgagt gctcgatggc gtcgcgcgc ggggacacgg 42060
 ttagtgcgcac gcccggcacc ttctcgccgt tctcgccggc a cgggtgtctg gctgcgcacg 42120
 gccggtccaa ggccttctcc tcgaccggcgg acggcacccgg ctggggccgag ggcgcggggg 42180
 tgctcgctct cgaacggctt tcggcgccgc aggagcgcgg ccacccgatt ctgcggcgta 42240
 tgcgcggcag cgcgtcaac caggatggcg cctccaaacgg cctgaccgcg cgcgaacggc 42300
 cttcgcagca gcccgtgatc cgcaaggcgc tcgcggcgcc cgggctggtc gcgtccgatg 42360
 tggacgtcgta ggaggcgccac ggcacgggca cccgcgttggg cgcggccgatc gaagcgcagg 42420
 cgctcgccgc gacctacggc caggggcgta agcggccgct gtggctgggg tcggtaagt 42480
 cgaacttcgg gcacacgcg gggccgcgc gggtcgcggg cgtgatcaag atggtccagg 42540
 ccctgcggca cggcgccatg cccgcgacc tcgcacgtggc cgcggccgacg cggggaggc 42600
 actggcgccgc cgggtcggtg gaactgtga ccgagccgcg cgcggccccc gccgggtatc 42660
 ggcgcgccc ggcgggggtg tcccggttcg ggtacgcgc gacgacgcgc cacctgatcc 42720
 tggaggaggc gccccggcc gacgcggcg cggaaagaacc ggagttcaag gggccgggtc 42780
 cgctggcgta ctccggcgccg agcccccacat ctttggcgcc tcaggccggc cggctcgccg 42840
 aggtcttgcgta tcccggtgg gtgtcccggt cccggctggc gacggggctg ctgtcgccgg 42900
 gggcgctgtc cggtgaccgc ggggtcggtg tcggggaaac gacgaggac gccggcgccg 42960
 ggttgcgtgc gctggcccgcc ggggaccgcg cggccggcgat gctgaccggc tcggccaagc 43020
 acggcaaggta cgtctacgtc ttcccgccgc agggttcgca gccggctcgcc atggggccgc 43080
 agctctacga cccgtacccg gtgttcgcga cggcgatcgta cgaggcttcg gacgactgg 43140
 acgtctgtct ggccggccgt gcccggcacc cgcgtgcggg cgtctcgctc ggcgaagtgc 43200
 ccggccaaac cggcgctgtc aaccagacgg tcttcacccca agccggctg ttccgggtgg 43260
 agagcgcgtc ttcccggtc gccgaatccct ggggtgtccg gccggacgtg gtgctcgcc 43320
 actccatcgta ggagatcacc gccgcgtatg cccgcggcgat ctttcgtctc cccggacgccc 43380
 cccggatcgta cgcggcgccg gggccgtca tgcaggcgat ggcgcggggc gggggcgatgg 43440
 tcgcgcgtcg cgcctccgaa gccgagggtgg cccaaactgtc cggcgacggc gtggaaactcg 43500
 ccggccgtcaa cggcccttcg cgggttagtcc tttccggggc cggggacgcg gtcgtcgccg 43560
 ccggccggcccg catgcgcgag cgcggcaca agaccaagca gctcaagggt tcgcacgcgt 43620

tccactccgc gcgatggcg ccgatgctgg cggagttcgc cgccgagctg gccggcgtga 43680
 cgtggcgcga gcccggatc cccgtggct ccaacgtgac cggccggttc gccgagcccg 43740
 gcgaactgac cgagccggc tactgggccg agcacgtgcg cggccgggtg cggtcgccc 43800
 agggcgtcgc ggccgcgacg gatccggcg gctcgctt cgtggagctc gggccgggg 43860
 cggcgtcgc cggccctcgtc gaggagacgg cggaggtcac ctgcgtcgcg cccctgcggg 43920
 acgaccgccc ggaggttacc gcgtatca cccgcgtcgc ctagctgttc gtccgcggg 43980
 ttgcgtcga ttggccggcc ctgtcgccgc cggtcacccgg gttcgtcgc acgtccaaatg 44040
 acgcattcga ccagcagcac tattggctgc agccccccgc gcaggccacg gacgcggcct 44100
 cgctcggcga ggtcgccgc gaccacccgc tgctggcgc ggtggccgg ctgcccggagt 44160
 cggacggcct ggtttaacc tcgcggctgt cattgaaatc gcacccgtgg ctggccgacc 44220
 acgtcatcgg cgggggtggc ctcgtcgccg gcaccgggtc cgtcgagctg gccgtccggg 44280
 cgggggacga ggccggctgc cccgtccctcg aagaactcgt catcgaggct cccgtggcgt 44340
 tccccgacca cggcggggtc cggatccagg tcgtcggtt ggcaccgggg gagaccggg 44400
 cgcgcgcgt cgaggtgtac tccctgcgcg aggacgcggg tgccgaagtg tggcccccggc 44460
 acggcaccgg gttctggcgt ggcacgcgt cgcagcacaa gccgttcgac ttacccgcct 44520
 ggccggccgc cggcgtcgag cggcgtcgacg tcgaggactt ctacgacggc ctcgtcgacc 44580
 gcggtacgc ctacggggcgc tcgttccggg gcctgcgggc ggtgtggcgc cgcggcgacg 44640
 aagtgttcgc cgaggtcgcc ctggccgagg acgaccgcgc ggacgcggcc cggtcggca 44700
 tccaccccg cctgctggac gcccggctgc acgcgggcat ggccgggtgcc accaccacgg 44760
 aagagcccg cggccgggtg ctggcggtc cctggAACGG cctgggtctg cacgcggccg 44820
 gggcgtccgc gtcggggcgc cggctcgccc cggcgggtcc ggacgcggctg tggcgtcgagg 44880
 ccgcggacga ggccgggggt ctgttgtga cggcggactc gtcggctctcc cggccgggtgt 44940
 cggccgaaca gtcggggcgc ggcggcgtacc acgacgcgtt gtcggcggtg gagtgaccg 45000
 agatttcctc ggctggagac gttccggcgg accacgtcga agtgcgtcgaa gccgtcgccg 45060
 aggatccctt ggaactgacc ggccgggtcc tggaggccgt cagacacgtt ctcgcggacg 45120
 cagccgacga cgctcgccctg gtctgtgtga cccgcggcgc cgtccacacg gtgactgacc 45180
 cggccgggtgc cggcgtgtgg ggcctgtatcc gggccgcga ggcggaaaac cccggaccgg 45240
 tcgtgtctgc ggacaccggc ggtgaagtgc cgttagggcgc ggtgtcgcc accggcgagc 45300
 cccaaacagc cgtccgaggc gcaacgtgtc tgccccggc gtcggccggc gccgaggccg 45360
 cggaggcacc ggcagtgacc ggccggacgg tcctgatctc gggccggccg tgcgtggcgc 45420
 cgctcaccgc cggcacctg gtccggccgc acggagtcgc gccgtgggt ctcgtcagcc 45480
 gccgtggccc cggccgcgc ggcgtggccg aactgaccgc tgaactcatt gtcaggccg 45540
 ccgaggtcgc cgtagtcgtc tgccgttgc cggaccggc ccagggtccgg gtactgtgg 45600
 ccgagcaccg cccgaacgac gtctgtgcaca cggccgggtg ttcgtacgac ggcgttccg 45660
 agtcgtgac gcccggagcc ctggccaagg tttcgccgc caaatgtact gtcgttgc 45720
 acctcgacga gtcgaccgcg gaactggata ttgcgtcggtt cgtcggttcc ttcccgccct 45780
 ccgggttctt cggctccgccc gggcaggacg actacgcgcg tgccaaacgc tacctggacg 45840
 ccgtggcgc cAACCGCCGG ggcggggcc tgccggcac atcgctggcc tggggcctgt 45900
 gggAACAGAC cggcggatg accgcgcacc tcggcgacgc cgaccaggcg cggcggagtc 45960
 cggcgggggt ctcgtccatc tcacccggc aaggcatgga gtcgttgcac gcaacgcggg 46020
 acgggctcg cgtccggcgt aagctggacc tgccaaacgc cccgcggccgc gggacgggtgc 46080
 cgcacctgtc ggcggcgtc gtccggccgg gacggcagca gggccgtccg cgcgtccactg 46140
 tggacaacgg actggccggg cgtactcgccg ggctcgccgc ggcggagccg gaggccgtgc 46200
 tgctcgacgt cgtccgcacg cagggtcgccg tgggtctggc gacgcggggc cggaggccg 46260
 tcccgccgga cacggcggtt aaggacaccg gttcgactc gtcgtacgtc gtggacttgc 46320
 gcaaccggct ggcggaggcg agcgggctga agtcgtccgc gacgtcgatc ttgcgttacc 46380
 cgacgcccgt cgcgtggcc cgtacactgc gtacgtact cggcgacacg gtggcaacaa 46440
 ctccgggtggc caccgcggcc gcaacgcgtc cggcgagcc gatcgccatc gtcggcatgg 46500
 cgtgggggtc gcccgggggg gtcaccgtc cggaaaggccct gtcggccctg gtcgtcgacg 46560
 gcctcgaaagg gtcgttccccc ttccggagg accggggctg gacgttccgg aacctgttgc 46620
 acgacgaccc cggccgttcc ggcacgcgt acaccacccg gggccgggtt ctcgcacggc 46680
 ccggcctgtt cggccggcc ttctcggtt tttcgccgc cggccgtct gccatggacc 46740
 cgcacgcgcg gtcgtgttc gagggggccct gggaaaggccct cgaaggcacc ggtgtcgacc 46800
 cggcgtcggtt gaaaggccgc gacgtcgccgg tggccgttccgg ggtgtccaaac caggccatcg 46860
 ggtatggccgc ggtatccggcc gaactggccg ggtacgcgtc caccggccggc gtcggccgtc 46920
 tcgtctcggtt cggcgttccgt taatgtttcg gttcgatgg accggccggc acgtatcgaca 46980
 cggcttgcgtc gtcgtcgatc acctggccgg gacggcgctg cggcaggccg 47040
 agtgctcgat ggccttggcc ggtggcgatc cgggtatgg gacgcggccgc acgttcgtgg 47100
 agtcgtcgaa gcaacgcggc ctggccggcg acggccgggtc caaggccatc gccgaaggcg 47160
 cggacggcacc gggctggcc gaggccgtcg gggtcgtcg gtcggagccg ctgtcggtgg 47220
 cgcgcgacgcg cggccaccgg gtcgtcgccg cggccgtccgc aactccgcacg 47280

gcgcgtccaa	cggcctgacc	gccccaacg	ggccgtcgca	gcaacgggtg	atccgcccggg	47340
ccctggccgg	cgccggcctc	gaaccgtccg	atgtggacat	cgtggaagg	cacggcacccg	47400
ggacggcgct	gggcgacccg	atcgaggcgc	aggccctgct	ggccacctac	ggcaaggacc	47460
gcaacccgga	gacgcccgtt	tggctggggt	cggtaagtc	gaacttcggc	cacacgcagt	47520
ccgcggccgg	cgtggccggg	gtgatcaaga	tggtgcaggc	gtcgccac	ggcgtcatgc	47580
cgeccacccct	gcacgtggac	cggcccacca	gccaggtcga	ctggtccgcg	ggggccgtcg	47640
aagtgtac	cgaggcacgg	gagtggccgc	ggaacggccg	tccgccccgg	gccgggggtgt	47700
cctcggttcgg	gatcagcgcc	acgaacgccc	acctgtatcat	cgaagaagca	ccggccgagc	47760
cacagcttgc	cggaccacccg	ccggacggcg	gtgtggtgcc	gtcggtcgctc	tccgctcgca	47820
gccccgggtgc	cctggccgg	caggcgcgtc	ggctggccac	gttcctcgcc	gacggggcccc	47880
tttccgacgt	cgccgggtcg	ctgacgagcc	gcccctgtt	cggcgagcgc	gcggctgtcg	47940
tggcgattc	ggccgaggaa	gcccgcgg	gtctgggcgc	actggcccgc	ggcgaagacg	48000
cgcggggcct	gttccgcggc	cgggtgccc	cgtccggcct	gcccggcaag	ctcggtgtgg	48060
tgttccccgg	gcaggggacg	cagtgggtgg	gcatggccg	cgaactcctc	gaagagtctc	48120
cggtgttcgc	cgagcgatc	gcccggatgt	cggccgcgt	ggagccgtgg	atcggtcggt	48180
cgctgttcga	cgtcctccgt	ggcgcacgg	acctcgatcg	gtcgatgt	ctgcagcccg	48240
cgtgtttgc	ggtgatggtc	ggcttgccg	cggtgtggtc	ctcgccgg	gtgggtccccg	48300
atgcgggtct	cggccactcc	cagggtgaga	tcgcccggc	gtcggtgtcg	gtgcgttgc	48360
cgtggagga	tgcggcgaag	gtgtttgccc	tgcgcagcca	ggccatcgcc	gcgaagctct	48420
ccggccgcgg	cggatggct	tcggtcgcct	tggcgaagc	cgatgtgg	tcgcggctgg	48480
cggacgggggt	cgaggtggct	gcccgtcaacg	gtccggcg	cgtggatgc	gccccggatg	48540
cccaggccct	cgacgaaacg	ctggaagcgc	tgtccgggtgc	ggaaatccgg	gtcggccggg	48600
tggcggtgga	ctacgcctcg	cacacccggc	acgtcgaaaga	catcgaaagac	accctcgccg	48660
aagcgcttgc	cgggatcgac	gcccgggcgc	cgctggtgcc	gttcctctcc	accctcaccg	48720
gcgagtggtat	ccgggacgag	ggcgtcg	acggcggcta	ctggtaccgg	aacctcg	48780
gccccgggtcg	gttcggcccg	gcccgtcg	cgctgtcg	ccaggggcac	gtgtgttcg	48840
tcgagctcag	cggccacccg	gtgtgttgc	agccgatcac	cgagctcacc	gacgaaaccg	48900
ccgcgtcg	caccgggtcg	ctgcgcggg	acgacgg	cctgcgcgg	ctgctgac	48960
cgtggccga	gtcttcgtc	cgtgggtcg	aagtggactg	gacgtcg	gtccggccgg	49020
cccgccgcga	cctccgcacg	tacgccttcg	accacgagca	ctactggctc	cgccgcgg	49080
acaccgttc	cgacgcgtc	tcgtggggc	tggccggg	ggaccacccg	ctgctcg	49140
cggcgtcg	gttccgcag	tccgacggc	tggtcttcac	ttccggc	tccctcg	49200
cgcacccctg	gtggccgac	cacgcgtc	gggacgtcg	gategtcccc	ggcacccgg	49260
tggcgtcg	ggccgtcg	gcccgtacg	aagccg	cccgtcg	gacgagctgg	49320
tgatcgaggc	ccgcgtcg	gtgccccg	gcccgggg	cgcgtcg	gtccgcctcg	49380
gccccccgc	cgacgacggt	tcgcgcacgg	tggacgtt	ctccctcg	gaagacgcgg	49440
acagctggct	ccggcgcacg	acgggcgtc	tgtccgg	gaaccggccg	cgggggaccg	49500
ccgcgttcga	tttcgcgc	tggccgcac	cggaggcgaa	gcccgtgg	ctcaccgg	49560
cctacgacgt	gtcgcggac	gtcggtacg	gtacgg	ca	ccgtcg	49620
ccgtgtggcg	gcccggc	ggaaacacca	ccgagac	ccgc	ccctgg	49680
aagacgcgg	cgcggaa	ggccgg	gcatccaccc	cgcg	gacgggg	49740
tgcactcgac	gatggtc	ggcg	acaccg	ctacgg	gacg	49800
tgcgttcgc	gtggaa	acgg	ctgcgg	acgcgg	cgctcg	49860
gcgtgc	cccc	gacgtctgt	cgctgg	cg	tccgg	49920
tggcgtcg	gtggat	ctgg	gcccgtgt	gac	cgacc	49980
ccgcggggc	ggcgg	ggcgg	ggctcg	acc	cgcca	50040
ttgtcctcg	tgg	acactt	ccgt	cc	cacc	50100
gagg	ggc	ggacgggt	cg	cc	ccgg	50160
gtcatggagg	ccgtcg	cgagg	gtgt	cc	gtgg	50220
gtggcc	gtcg	cg	gt	cc	gtgg	50280
ccgcggcg	tgcc	cc	gt	cc	gtgg	50340
gggctgg	gg	cc	gt	cc	gtgg	50400
ccggaa	acgt	cc	gt	cc	gtgg	50460
gcgg	gac	cc	gt	cc	gtgg	50520
ccgcgg	tc	gg	gt	cc	gtgg	50580
ggcctgg	cc	gg	gt	cc	gtgg	50640
ccgcgg	tg	gg	gt	cc	gtgg	50700
ccgcacgt	cggt	cg	gt	cc	gtgg	50760
accgagcacc	ggccgt	cc	gt	cc	gtgg	50820
gggacgg	cccc	gg	gt	cc	gtgg	50880
cac	cc	gg	gt	cc	gtgg	50940

tccgcggtgt tcatgggcgc cggcagcggc agctacgccc cggcgaacgc gtacctggac 51000
 gggctgatgg cccaccggcg cgccggccggc ctggccggcc agtcgtctggc gtgggggctg 51060
 tgggaccaga ccaccggcg catggccggc gggaccgacg aggccggccg ggccggatg 51120
 accccggcgcg gcggcctggt cgcatgaaa cccgcccccg gactggaccc ttgcacgct 51180
 gccatcggtt cccggcgagcc gctgtgggt cccgcccagc tcgacctgcg gggcctgcgc 51240
 gccgaaggcg cggccggcac cgaagtgcgc cacctgtgc gccggcctggt ccgcggcga 51300
 cgccagcagg cccgtgcggc gtccactgtg gaggagaact gggccggccg gctggccggg 51360
 ctcgagccgg cccggcgcccc ccaggtcctc ctggaaactgg tgccgcggcca ggtggcaggg 51420
 gtcctgggtt acccgccgc ccaccagggtc gacccggacc agggcctgtt cgagatcggg 51480
 ttcgactcgc tcaccgcgt cgaactccgc aaccggctgc gcgccaggac cgaacggaaag 51540
 atctcgccccgtgtcgctt cgaccatccc acgcccggccc tgctcgccgc gcacttgaac 51600
 gagctgtcc gaaagaaggt gtgaacgtgt tcgacgtgg aacctaccc cagcggatcg 51660
 gctgccggcg ggaaaccggc gtggacctcg aaacgtggc gaagctgcag aagagccacc 51720
 ttagggcgat cccgtacagc agctcgctt acgaactccg ggacgcgggtg aacgtcgctg 51780
 acctcgacga ggacgacgtc ttctgtcacca gcatcgccga agggcaggccc ggcgcctgt 51840
 accacctgaa cccggctttt caccggctcc tgaccgaact cggctacgac gtcacggccgc 51900
 tggccggcg caccggccaa ggccgggaga ctttcggcgc cggacgtcgag cacatgttca 51960
 acctgggtcac cctggacggc gccgactggc tcgtggacgt cggctacccc ggccccacct 52020
 acgtcgagcc actggcggtc tcgccccggg tgccagacca gtaacgggagc cagttccgg 52080
 tggtaaca ggaaaccggt tatgcgtgc aacgggggg tgccgtcacc cgctggagcg 52140
 tcgtctacac gttcacgcac caaccgcgtc agtggagtga ctggaaaggaa ctggaggaca 52200
 acttccggc cctcgtgggg gacaccaccc gcaccgacac gcaggaaacc ctgtcgccgc 52260
 ggcgcgttcgc gaacggccag gtcttcctgc ggcagcggccg ctacctgacg gtcgagaacg 52320
 gccgcgagca ggtgcgcacg atcaccgacg acgacgagtt cccggcgctg gtgtcccgcg 52380
 tgctgtccgg cgaccacggc tgaactggcg aaaggcacga cgtatgcacgg aaaagcgggc 52440
 ctgctggcgaa agttcgccgg cctctgcaaa accgcctacg agcaccacta catccgtac 52500
 ctgcacttct tctacggcg ctagtaccc caccacggca gcgagccggt gtcccgatc 52560
 gcgacactgc cgtacgtgac cgtgcccggag ccgcggaaaga aggccggctg aggacgacga 52620
 tcccggtccg cctggcgaa cggctctacg acgtgtcggt cggccccggg gtgcggccgg 52680
 cgctgcccga ggtcgccgg cggctcgccg cgagacgggc cgtggctgtg tcggcccgcc 52740
 cggcggactg ggtgcccggg accggcgctcg agacccgtc gtcggaggcg cgcgcacggcg 52800
 agccgaccaa gcggtgtcc acagtggagg aactgtgcgg tgagttcgcc cgggtcgccc 52860
 tcacccggc ctagtgcgtg gtctctgcg gcgccggcac gaccacggac gtcgtcgccc 52920
 tcgcggccgc gctgtaccc cgggggggtcg cctgtgtccaa cctgccccacg tccctgtcg 52980
 cccagggtcgaa cggccaggcgtc ggccggaaaga ccgcggtgaa cctgcccggcg ggcaagaacc 53040
 tcgtcgccgc gtactggcg cccagcgcgg tgctgtgcga cacggactac ctgacgacgc 53100
 tgcccgccgc ggaggtgtcg aacggcctcg gcgagatcgc cgcgtgccac ttcatcgccg 53160
 cgccggaccc gcgccggccgc tcgcggccgg agcagatcgc cgcgcacggc accctaagg 53220
 cgggcattcg cgcgcaggac gagcgggaca cccggcccg cgcacactgc aactacggcc 53280
 acacgctggg cgcacgcgtc gagatcgcga cccgcgttcgc cctgcgcac ggcgaggccg 53340
 tggcgatcg caccgttcc gcccggccgc tggccggccg ctcggccgc ctcgaccagt 53400
 cccgtgtgga cgaacaccc cccgtcgctc gccactacgg cctgcccgc ggcgtcgccc 53460
 cggacgtcgaa cccggcggtg ctcgtccggc agatgtaccc ggacaagaag ggcgtacccg 53520
 ggctcgccct cgtcctggcc gggccggccgg ggcggagct ggtgagcgc gtcggccgc 53580
 cggtcgtcac ctagtgcgtg gacggatgc cccgcgtac cctggaaaac ctgggggggaa 53640
 cgacggaaagc ggccggccgc tgaagcggca gccggacttc gcccggccacg gccggccgg 53700
 cgaccgggtg ctggccggcc ggctgagcgc ggcgtcgcc cggccggccg cgcagcagcc 53760
 gggctggccg gacgcccggc gggccggccga ggtgaattc 53799

<210> 4

<211> 4572

<212> PRT

<213> Amycolatopsis mediterranei

<400> 4

Met Phe Tyr Thr Ser Gly Thr Thr Gly Arg Pro Lys Gly Val Val Ser

1

5

10

15

Thr Gln Arg Asn Cys Leu Trp Ser Val Ala Ser Cys Tyr Val Pro Phe

20

25

30

Pro Gly Leu Ser Asp Gln Asp Arg Val Leu Trp Pro Leu Pro Leu Phe
 35 40 45

 His Ser Leu Ser His Ile Ala Cys Val Leu Ser Ala Thr Val Val Gly
 50 55 60

 Ala Ser Val Arg Ile Ala Asp Gly Ser Ser Ala Asp Asp Val Met Arg
 65 70 75 80

 Leu Ile Glu Ala Glu Ser Ser Thr Phe Leu Ala Gly Val Pro Thr Thr
 85 90 95

 Tyr His His Leu Val Arg Ala Ala Arg Gln Arg Gly Phe Ser Ala Pro
 100 105 110

 Ser Leu Arg Ile Gly Leu Ala Gly Gly Ala Val Leu Gly Ala Gly Leu
 115 120 125

 Arg Ser Glu Phe Glu Glu Thr Phe Gly Val Pro Leu Ile Asp Ala Tyr
 130 135 140

 Gly Ser Thr Glu Thr Cys Gly Ala Ile Thr Met Asn Pro Pro Asp Gly
 145 150 155 160

 Ala Arg Val Glu Gly Ser Cys Gly Leu Ala Val Pro Gly Val Asp Val
 165 170 175

 Arg Val Val Asp Pro Asp Thr Gly Leu Asp Val Pro Ala Gly Glu Glu
 180 185 190

 Gly Glu Val Trp Val Ser Gly Pro Asn Val Met Leu Gly Tyr His Asn
 195 200 205

 Ser Pro Glu Ala Thr Ala Ala Ala Met Arg Asp Gly Trp Phe Arg Thr
 210 215 220

 Gly Asp Leu Ala Arg Arg Asp Asp Ala Gly Tyr Phe Thr Ile Cys Gly
 225 230 235 240

 Arg Ile Lys Glu Leu Ile Ile Arg Gly Gly Ala Asn Ile His Pro Gly
 245 250 255

 Glu Val Glu Ala Val Leu Arg Thr Val Asp Gly Val Ala Asp Ala Ala
 260 265 270

 Val Gly Gly Val Pro His Asp Thr Leu Gly Glu Val Pro Val Ala Tyr
 275 280 285

 Val Ile Pro Gly Pro Thr Gly Phe Asp Pro Ala Ala Leu Ile Glu Lys
 290 295 300

 Cys Arg Glu Gln Leu Ser Ala Tyr Lys Val Pro Asp Arg Ile Leu Glu
 305 310 315 320

 Val Ala His Ile Pro Arg Thr Ala Ser Gly Lys Ile Arg Arg Gly Leu
 325 330 335

 Leu Thr Asp Glu Pro Ala Gln Leu Arg Tyr Ala Ala Thr Glu His Glu
 340 345 350

 Glu Gln Ser Arg His Ala Asp Glu Ser Val Ala Ala Leu Arg Ala

355	360	365
Arg Leu Ser Gly Leu Asp Glu Arg Ala Gln Cys Glu	Leu Leu Glu Asp	
370	375	380
Leu Val Arg Thr Gln Ala Ala Asp Val Leu Gly Gln	Pro Val Pro Asp	
385	390	395
Gly Arg Ala Phe Arg Asp Leu Gly Phe Thr Ser Leu	Ala Ile Val Glu	
405	410	415
Leu Arg Asn Arg Leu Thr Glu His Thr Gly Leu Trp	Leu Pro Ala Ser	
420	425	430
Ala Val Phe Asp His Pro Thr Pro Ala Ala Leu Ala	Arg Val Arg	
435	440	445
Ala Glu Leu Leu Gly Ile Thr Gln Ala Val Ala Glu	Pro Val Val Ala	
450	455	460
Ala Asp Pro Gly Glu Pro Ile Ala Ile Val Gly Met	Ala Cys Arg Leu	
465	470	475
Pro Gly Gly Val Ala Ser Pro Glu Asp Leu Trp Arg	Leu Val Ala Glu	
485	490	495
Arg Val Asp Ala Val Ser Glu Phe Pro Gly Asp Arg	Gly Trp Asp Leu	
500	505	510
Asp Ser Leu Ile Asp Pro Asp Arg Glu Arg Ala Gly	Thr Ser Tyr Val	
515	520	525
Gly Gln Gly Gly Phe Leu His Asp Ala Gly Glu Phe	Asp Ala Gly Phe	
530	535	540
Phe Gly Ile Ser Pro Arg Glu Ala Val Ala Met Asp	Pro Gln Gln Arg	
545	550	555
Leu Leu Leu Glu Thr Ser Trp Glu Ala Leu Glu Asn	Ala Gly Val Asp	
565	570	575
Pro Ile Ala Leu Lys Gly Thr Asp Thr Gly Val Phe	Ser Gly Leu Met	
580	585	590
Gly Gln Gly Tyr Gly Ser Gly Ala Val Ala Pro Glu	Leu Glu Gly Phe	
595	600	605
Val Thr Thr Gly Val Ala Ser Ser Val Ala Ser Gly	Arg Val Ser Tyr	
610	615	620
Val Leu Gly Leu Glu Gly Pro Ala Val Thr Val Asp	Thr Ala Cys Ser	
625	630	635
Ser Ser Leu Val Ala Met His Leu Ala Ala Gln Ala	Leu Arg Gln Gly	
645	650	655
Glu Cys Ser Met Ala Leu Ala Gly Gly Val Thr Val	Met Ala Thr Pro	
660	665	670
Gly Ser Phe Val Glu Phe Ser Arg Gln Arg Ala Leu	Ala Pro Asp Gly	
675	680	685

Arg Cys Lys Ala Phe Ala Ala Ala Asp Gly Thr Gly Trp Ser Glu
 690 695 700
 Gly Val Gly Val Val Leu Glu Arg Leu Ser Val Ala Arg Glu Arg
 705 710 715 720
 Gly His Arg Ile Leu Ala Val Leu Arg Gly Ser Ala Val Asn Gln Asp
 725 730 735
 Gly Ala Ser Asn Gly Leu Thr Ala Pro Asn Gly Leu Ser Gln Gln Arg
 740 745 750
 Val Ile Arg Arg Ala Leu Ala Ala Gly Leu Ala Pro Ser Asp Val
 755 760 765
 Asp Val Val Glu Ala His Gly Thr Gly Thr Thr Leu Gly Asp Pro Ile
 770 775 780
 Glu Ala Gln Ala Leu Leu Ala Thr Tyr Gly Gln Glu Arg Lys Gln Pro
 785 790 795 800
 Leu Trp Leu Gly Ser Leu Lys Ser Asn Ile Gly His Ala Gln Ala Ala
 805 810 815
 Ala Gly Val Ala Gly Val Ile Lys Met Val Gln Ala Leu Arg His Glu
 820 825 830
 Thr Leu Pro Pro Thr Leu His Val Asp Lys Pro Thr Leu Glu Val Asp
 835 840 845
 Trp Ser Ala Gly Ala Ile Glu Leu Leu Thr Glu Ala Arg Ala Trp Pro
 850 855 860
 Arg Asn Gly Arg Pro Arg Arg Ala Gly Val Ser Ser Phe Gly Val Ser
 865 870 875 880
 Gly Thr Asn Ala His Leu Ile Leu Glu Glu Ala Pro Ala Glu Glu Pro
 885 890 895
 Val Ala Ala Pro Glu Leu Pro Val Val Pro Leu Val Val Ser Ala Arg
 900 905 910
 Ser Thr Glu Ser Leu Ser Gly Gln Ala Glu Arg Leu Ala Ser Leu Leu
 915 920 925
 Glu Gly Asp Val Ser Leu Thr Glu Val Ala Gly Ala Leu Val Ser Arg
 930 935 940
 Arg Ala Val Leu Asp Glu Arg Ala Val Val Val Ala Gly Ser Arg Glu
 945 950 955 960
 Glu Ala Val Thr Gly Leu Arg Ala Leu Asn Thr Ala Gly Ser Gly Thr
 965 970 975
 Pro Gly Lys Val Val Trp Val Phe Pro Gly Gln Gly Thr Gln Trp Ala
 980 985 990
 Gly Met Gly Arg Glu Leu Leu Ala Glu Ser Pro Val Phe Ala Glu Arg
 995 1000 1005

Ile Ala Glu Cys Ala Ala Ala Leu Ala Pro Trp Ile Asp Trp Ser Leu
 1010 1015 1020

Val Asp Val Leu Arg Gly Glu Gly Asp Leu Gly Arg Val Asp Val Leu
 1025 1030 1035 1040

Gln Pro Ala Cys Phe Ala Val Met Val Gly Leu Ala Ala Val Trp Glu
 1045 1050 1055

Ser Val Gly Val Arg Pro Asp Ala Val Val Gly His Ser Gln Gly Glu
 1060 1065 1070

Ile Ala Ala Ala Cys Val Ser Gly Ala Leu Ser Leu Glu Asp Ala Ala
 1075 1080 1085

Lys Val Val Ala Leu Arg Ser Gln Ala Ile Ala Ala Glu Leu Ser Gly
 1090 1095 1100

Arg Gly Gly Met Ala Ser Val Ala Leu Gly Glu Asp Asp Val Val Ser
 1105 1110 1115 1120

Arg Leu Val Asp Gly Val Glu Val Ala Ala Val Asn Gly Pro Ser Ser
 1125 1130 1135

Val Val Ile Ala Gly Asp Ala His Ala Leu Asp Ala Thr Leu Glu Ile
 1140 1145 1150

Leu Ser Gly Glu Gly Ile Arg Val Arg Arg Val Ala Val Asp Tyr Ala
 1155 1160 1165

Ser His Thr Arg His Val Glu Asp Ile Arg Asp Thr Leu Ala Glu Thr
 1170 1175 1180

Leu Ala Gly Ile Ser Ala Gln Ala Pro Ala Val Pro Phe Tyr Ser Thr
 1185 1190 1195 1200

Val Thr Ser Glu Trp Val Arg Asp Ala Gly Val Leu Asp Gly Gly Tyr
 1205 1210 1215

Trp Tyr Arg Asn Leu Arg Asn Gln Val Arg Phe Gly Ala Ala Ala Thr
 1220 1225 1230

Ala Leu Leu Glu Gln Gly His Thr Val Phe Val Glu Val Ser Ala His
 1235 1240 1245

Pro Val Thr Val Gln Pro Leu Ser Glu Leu Thr Gly Asp Ala Ile Gly
 1250 1255 1260

Thr Leu Arg Arg Glu Asp Gly Gly Leu Arg Arg Leu Leu Ala Ser Met
 1265 1270 1275 1280

Gly Glu Leu Phe Val Arg Gly Ile Asp Val Asp Trp Thr Ala Met Val
 1285 1290 1295

Pro Ala Ala Gly Trp Val Asp Leu Pro Thr Tyr Ala Phe Glu His Arg
 1300 1305 1310

His Tyr Trp Leu Glu Pro Ala Glu Pro Ala Ser Ala Gly Asp Pro Leu
 1315 1320 1325

Leu Gly Thr Val Val Ser Thr Pro Gly Ser Asp Arg Leu Thr Ala Val

1330	1335	1340
Ala Gln Trp Ser Arg Arg Ala Gln Pro Trp Ala Val Asp Gly Leu Val		
1345	1350	1355
Pro Asn Ala Ala Leu Val Glu Ala Ala Ile Arg Leu Gly Asp Leu Ala		
1365	1370	1375
Gly Thr Pro Val Val Gly Glu Leu Val Val Asp Ala Pro Val Val Leu		
1380	1385	1390
Pro Arg Arg Gly Ser Arg Glu Val Gln Leu Ile Val Gly Glu Pro Gly		
1395	1400	1405
Glu Gln Arg Arg Arg Pro Ile Glu Val Phe Ser Arg Glu Ala Asp Glu		
1410	1415	1420
Pro Trp Thr Arg His Ala His Gly Thr Leu Ala Pro Ala Ala Ala Ala		
1425	1430	1435
Val Pro Glu Pro Ala Ala Ala Gly Asp Ala Thr Asp Val Thr Val Ala		
1445	1450	1455
Gly Leu Arg Asp Ala Asp Arg Tyr Gly Ile His Pro Ala Leu Leu Asp		
1460	1465	1470
Ala Ala Val Arg Thr Val Val Gly Asp Asp Leu Leu Pro Ser Val Trp		
1475	1480	1485
Thr Gly Val Ser Leu Leu Ala Ser Gly Ala Thr Ala Val Thr Val Thr		
1490	1495	1500
Pro Thr Ala Thr Gly Leu Arg Leu Thr Asp Pro Ala Gly Gln Pro Val		
1505	1510	1515
Leu Thr Val Glu Ser Val Arg Gly Thr Pro Phe Val Ala Glu Gln Gly		
1525	1530	1535
Thr Thr Asp Ala Leu Phe Arg Val Asp Trp Pro Glu Ile Pro Leu Pro		
1540	1545	1550
Thr Ala Glu Thr Ala Asp Phe Leu Pro Tyr Glu Ala Thr Ser Ala Glu		
1555	1560	1565
Ala Thr Leu Ser Ala Leu Gln Ala Trp Leu Ala Asp Pro Ala Glu Thr		
1570	1575	1580
Arg Leu Ala Val Val Thr Gly Asp Cys Thr Glu Pro Gly Ala Ala Ala		
1585	1590	1595
Ile Trp Gly Leu Val Arg Ser Ala Gln Ser Glu His Pro Gly Arg Ile		
1605	1610	1615
Val Leu Ala Asp Leu Asp Asp Pro Ala Val Leu Pro Ala Val Val Ala		
1620	1625	1630
Ser Gly Glu Pro Gln Val Arg Val Arg Asn Gly Val Ala Ser Val Pro		
1635	1640	1645
Arg Leu Thr Arg Val Thr Pro Arg Gln Asp Ala Arg Pro Leu Asp Pro		
1650	1655	1660

Glu Gly Thr Val Leu Ile Thr Gly Gly Thr Gly Thr Leu Gly Ala Leu
 1665 1670 1675 1680

 Thr Ala Arg His Leu Val Thr Ala His Gly Val Arg His Leu Val Leu
 1685 1690 1695

 Val Ser Arg Arg Gly Glu Ala Pro Glu Leu Gln Glu Glu Leu Thr Ala
 1700 1705 1710

 Leu Gly Ala Ser Val Ala Ile Ala Ala Cys Asp Val Ala Asp Arg Ala
 1715 1720 1725

 Gln Leu Glu Ala Val Leu Arg Ala Ile Pro Ala Glu His Pro Leu Thr
 1730 1735 1740

 Ala Val Ile His Thr Ala Gly Val Leu Asp Asp Gly Val Val Thr Glu
 1745 1750 1755 1760

 Leu Thr Pro Asp Arg Leu Ala Thr Val Arg Arg Pro Lys Val Asp Ala
 1765 1770 1775

 Ala Arg Leu Leu Asp Glu Leu Thr Arg Glu Ala Asp Leu Ala Ala Phe
 1780 1785 1790

 Val Leu Phe Ser Ser Ala Ala Gly Val Leu Gly Asn Pro Gly Gln Ala
 1795 1800 1805

 Gly Tyr Ala Ala Ala Asn Ala Glu Leu Asp Ala Leu Ala Arg Gln Arg
 1810 1815 1820

 Asn Ser Leu Asp Leu Pro Ala Val Ser Ile Ala Trp Gly Tyr Trp Ala
 1825 1830 1835 1840

 Thr Val Ser Gly Met Thr Glu His Leu Gly Asp Ala Asp Leu Arg Arg
 1845 1850 1855

 Asn Gln Arg Ile Gly Met Ser Gly Leu Pro Ala Asp Glu Gly Met Ala
 1860 1865 1870

 Leu Leu Asp Ala Ala Ile Ala Thr Gly Gly Thr Leu Val Ala Ala Lys
 1875 1880 1885

 Phe Asp Val Ala Ala Leu Arg Ala Thr Ala Lys Ala Gly Gly Pro Val
 1890 1895 1900

 Pro Pro Leu Leu Arg Gly Leu Ala Pro Leu Pro Arg Arg Ala Ala Ala
 1905 1910 1915 1920

 Lys Thr Ala Ser Leu Thr Glu Arg Leu Ala Gly Leu Ala Glu Thr Glu
 1925 1930 1935

 Gln Ala Ala Ala Leu Leu Asp Leu Val Arg Arg His Ala Ala Glu Val
 1940 1945 1950

 Leu Gly His Ser Gly Ala Glu Ser Val His Ser Gly Arg Thr Phe Lys
 1955 1960 1965

 Asp Ala Gly Phe Asp Ser Leu Thr Ala Val Glu Leu Arg Asn Arg Leu
 1970 1975 1980

Ala Ala Ala Thr Gly Leu Thr Leu Ser Pro Ala Met Ile Phe Asp Tyr
 1985 1990 1995 2000

 Pro Lys Pro Pro Ala Leu Ala Asp His Leu Arg Ala Lys Leu Phe Gly
 2005 2010 2015

 Ser Ala Ala Asn Arg Pro Ala Glu Ile Gly Thr Ala Ala Ala Glu Glu
 2020 2025 2030

 Pro Ile Ala Ile Val Ala Met Ala Cys Arg Phe Pro Gly Gly Val His
 2035 2040 2045

 Ser Pro Glu Asp Leu Trp Arg Leu Val Ala Asp Gly Ala Asp Ala Val
 2050 2055 2060

 Thr Glu Phe Pro Ala Asp Arg Gly Trp Asp Thr Asp Arg Leu Tyr His
 2065 2070 2075 2080

 Glu Asp Pro Asp His Glu Gly Thr Thr Tyr Val Arg His Gly Ala Phe
 2085 2090 2095

 Leu Asp Asp Ala Ala Gly Phe Asp Ala Ala Phe Phe Gly Ile Ser Pro
 2100 2105 2110

 Asn Glu Ala Leu Ala Met Asp Pro Gln Gln Arg Leu Leu Leu Glu Thr
 2115 2120 2125

 Ser Trp Glu Leu Phe Glu Arg Ala Ala Ile Asp Pro Thr Thr Leu Ala
 2130 2135 2140

 Gly Gln Asp Ile Gly Val Phe Ala Gly Val Asn Ser His Asp Tyr Ser
 2145 2150 2155 2160

 Met Arg Met His Arg Ala Ala Gly Val Glu Gly Phe Arg Leu Thr Gly
 2165 2170 2175

 Gly Ser Ala Ser Val Leu Ser Gly Arg Val Ala Tyr His Phe Gly Val
 2180 2185 2190

 Glu Gly Pro Ala Val Thr Val Asp Thr Ala Cys Ser Ser Ser Leu Val
 2195 2200 2205

 Ala Leu His Met Ala Val Gln Ala Leu Gln Arg Gly Glu Cys Ser Met
 2210 2215 2220

 Ala Leu Ala Gly Gly Val Met Val Met Gly Thr Val Glu Thr Phe Val
 2225 2230 2235 2240

 Glu Phe Ser Arg Gln Arg Gly Leu Ala Pro Asp Gly Arg Cys Lys Ala
 2245 2250 2255

 Phe Ala Asp Gly Ala Asp Gly Thr Gly Trp Ser Glu Gly Val Gly Leu
 2260 2265 2270

 Leu Leu Val Glu Arg Leu Ser Glu Ala Gln Arg Arg Gly His Gln Val
 2275 2280 2285

 Leu Ala Val Val Arg Gly Ser Ala Val Asn Ser Asp Gly Ala Ser Asn
 2290 2295 2300

 Gly Leu Thr Ala Pro Asn Gly Pro Ser Gln Gln Arg Val Ile Arg Lys

2305	2310	2315	2320
Ala Leu Ala Ala Ala Gly Leu Ser Thr Ser Asp Val Asp Ala Val Glu			
2325	2330	2335	
Ala His Gly Thr Gly Thr Thr Leu Gly Asp Pro Ile Glu Ala Glu Ala			
2340	2345	2350	
Leu Leu Ala Thr Tyr Gly Gln Asn Arg Glu Thr Pro Leu Trp Leu Gly			
2355	2360	2365	
Ser Val Lys Ser Asn Leu Gly His Thr Gln Ala Ala Ala Gly Val Ala			
2370	2375	2380	
Gly Val Ile Lys Met Val Met Ala Met Arg His Gly Val Leu Pro Arg			
2385	2390	2395	2400
Thr Leu His Val Asp Arg Pro Ser Ser Tyr Val Asp Trp Ser Ala Gly			
2405	2410	2415	
Ala Val Glu Leu Leu Thr Glu Ala Arg Asp Trp Val Ser Asn Gly His			
2420	2425	2430	
Pro Arg Arg Ala Gly Val Ser Ser Phe Gly Ile Gly Gly Thr Asn Ala			
2435	2440	2445	
His Val Val Leu Glu Glu Val Ala Ala Pro Ile Thr Thr Pro Gln Pro			
2450	2455	2460	
Glu Pro Ala Glu Phe Leu Val Pro Val Leu Val Ser Ala Arg Thr Ala			
2465	2470	2475	2480
Ala Gly Leu Arg Gly Gln Ala Gly Arg Leu Ala Ala Phe Leu Gly Asp			
2485	2490	2495	
Arg Thr Asp Val Arg Val Pro Asp Ala Ala Tyr Ala Leu Ala Thr Thr			
2500	2505	2510	
Arg Ala Gln Leu Asp His Arg Ala Val Val Leu Ala Ser Asp Arg Ala			
2515	2520	2525	
Gln Leu Cys Ala Asp Leu Ala Ala Phe Gly Ser Gly Val Val Thr Gly			
2530	2535	2540	
Thr Pro Val Asp Gly Lys Leu Ala Val Leu Phe Thr Gly Gln Gly Ser			
2545	2550	2555	2560
Gln Trp Ala Gly Met Gly Arg Glu Leu Ala Glu Thr Phe Pro Val Phe			
2565	2570	2575	
Arg Asp Ala Phe Glu Ala Ala Cys Glu Ala Val Asp Thr His Leu Arg			
2580	2585	2590	
Glu Arg Pro Leu Arg Glu Val Val Phe Asp Asp Ser Ala Leu Leu Asp			
2595	2600	2605	
Gln Thr Met Tyr Thr Gln Gly Ala Leu Phe Ala Val Glu Thr Ala Leu			
2610	2615	2620	
Phe Arg Leu Phe Glu Ser Trp Gly Val Arg Pro Gly Leu Leu Ala Gly			
2625	2630	2635	2640

His Ser Ile Gly Glu Leu Ala Ala Ala His Val Ser Gly Val Leu Asp
 2645 2650 2655

 Leu Ala Asp Ala Gly Glu Leu Val Ala Ala Arg Gly Arg Leu Met Gln
 2660 2665 2670

 Ala Leu Pro Ala Gly Gly Ala Met Val Ala Val Gln Ala Thr Glu Asp
 2675 2680 2685

 Glu Val Ala Pro Leu Leu Asp Gly Thr Val Cys Val Ala Ala Val Asn
 2690 2695 2700

 Gly Pro Asp Ser Val Val Leu Ser Gly Thr Glu Ala Ala Val Leu Ala
 2705 2710 2715 2720

 Val Ala Asp Glu Leu Ala Gly Arg Gly Arg Lys Thr Arg Arg Leu Ala
 2725 2730 2735

 Val Ser His Ala Phe His Ser Pro Leu Met Glu Pro Met Leu Asp Asp
 2740 2745 2750

 Phe Arg Ala Val Ala Glu Arg Leu Thr Tyr Arg Ala Gly Ser Leu Pro
 2755 2760 2765

 Val Val Ser Thr Leu Thr Gly Glu Leu Ala Ala Leu Asp Ser Pro Asp
 2770 2775 2780

 Tyr Trp Val Gly Gln Val Arg Asn Ala Val Arg Phe Ser Asp Ala Val
 2785 2790 2795 2800

 Thr Ala Leu Gly Ala Gln Gly Ala Ser Thr Phe Leu Glu Leu Gly Pro
 2805 2810 2815

 Gly Gly Ala Leu Ala Ala Met Ala Leu Gly Thr Leu Gly Gly Pro Glu
 2820 2825 2830

 Gln Ser Cys Val Ala Thr Leu Arg Lys Asn Gly Ala Glu Val Pro Asp
 2835 2840 2845

 Val Leu Thr Ala Leu Ala Glu Leu His Val Arg Gly Val Gly Val Asp
 2850 2855 2860

 Trp Thr Thr Val Leu Asp Glu Pro Ala Thr Ala Val Gly Thr Val Leu
 2865 2870 2875 2880

 Pro Thr Tyr Ala Phe Gln His Gln Arg Phe Trp Val Asp Val Asp Glu
 2885 2890 2895

 Thr Ala Ala Val Ser Val Thr Pro Pro Pro Ala Glu Pro Ile Val Asp
 2900 2905 2910

 Arg Pro Val Gln Asp Val Leu Glu Leu Val Arg Glu Ser Ala Ala Val
 2915 2920 2925

 Val Leu Gly His Arg Asp Ala Gly Ser Phe Asp Leu Asp Arg Ser Phe
 2930 2935 2940

 Lys Asp His Gly Phe Asp Ser Leu Ser Ala Val Lys Leu Arg Asn Arg
 2945 2950 2955 2960

Leu Arg Asp Phe Thr Gly Val Glu Leu Pro Ser Thr Leu Ile Phe Asp
 2965 2970 2975
 Tyr Pro Asn Pro Ala Val Leu Ala Asp His Leu Arg Ala Glu Leu Leu
 2980 2985 2990
 Gly Glu Arg Pro Ala Ala Pro Ala Pro Val Thr Arg Asp Val Ser Asp
 2995 3000 3005
 Glu Pro Ile Ala Ile Val Gly Met Ser Thr Arg Leu Pro Gly Gly Ala
 3010 3015 3020
 Asp Ser Pro Glu Glu Leu Trp Lys Leu Val Ala Glu Gly Arg Asp Ala
 3025 3030 3035 3040
 Val Ser Gly Phe Pro Val Asp Arg Gly Trp Asp Leu Asp Gly Leu Tyr
 3045 3050 3055
 His Pro Asp Pro Ala His Ala Gly Thr Ser Tyr Thr Arg Ser Gly Gly
 3060 3065 3070
 Phe Leu His Asp Ala Ala Gln Phe Asp Ala Gly Leu Phe Gly Ile Ser
 3075 3080 3085
 Pro Arg Glu Ala Leu Ala Met Asp Pro Gln Gln Arg Leu Leu Leu Glu
 3090 3095 3100
 Thr Ser Trp Glu Ala Leu Glu Arg Ala Gly Val Asp Pro Leu Ser Ala
 3105 3110 3115 3120
 Arg Gly Ser Asp Val Gly Val Phe Thr Gly Ile Val His His Asp Tyr
 3125 3130 3135
 Val Thr Arg Leu Arg Glu Val Pro Glu Asp Val Gln Gly Tyr Thr Met
 3140 3145 3150
 Thr Gly Thr Ala Ser Ser Val Ala Ser Gly Arg Val Ala Tyr Val Phe
 3155 3160 3165
 Gly Phe Glu Gly Pro Ala Val Thr Val Asp Thr Ala Cys Ser Ser Ser
 3170 3175 3180
 Leu Val Ala Met His Leu Ala Ala Gln Ala Leu Arg Gln Gly Glu Cys
 3185 3190 3195 3200
 Ser Met Ala Leu Ala Gly Gly Ala Thr Val Met Ala Ser Pro Asp Ala
 3205 3210 3215
 Phe Leu Glu Phe Ser Arg Gln Arg Gly Leu Ser Ala Asp Gly Arg Cys
 3220 3225 3230
 Lys Ala Tyr Ala Glu Gly Ala Asp Gly Thr Gly Trp Ala Glu Gly Val
 3235 3240 3245
 Gly Val Val Val Leu Glu Arg Leu Ser Val Ala Arg Glu Arg Gly His
 3250 3255 3260
 Arg Val Leu Ala Val Leu Arg Gly Ser Ala Val Asn Gln Asp Gly Ala
 3265 3270 3275 3280
 Ser Asn Gly Leu Thr Ala Pro Asn Gly Pro Ser Gln Gln Arg Val Ile

3285	3290	3295
Arg Gly Ala Leu Ala Ser Ala Gly Leu Ala Pro Ser Asp Val Asp Val		
3300	3305	3310
Val Glu Gly His Gly Thr Gly Thr Ala Leu Gly Asp Pro Ile Glu Val		
3315	3320	3325
Gln Ala Leu Leu Ala Thr Tyr Gly Gln Glu Arg Gln Pro Leu Trp		
3330	3335	3340
Leu Gly Ser Leu Lys Ser Asn Leu Gly His Thr Gln Ala Ala Ala Gly		
3345	3350	3355
Val Val Gly Val Ile Lys Met Ile Met Ala Met Arg His Gly Val Met		
3365	3370	3375
Pro Ala Thr Leu His Val Asp Glu Arg Thr Ser Gln Val Asp Trp Ser		
3380	3385	3390
Ala Gly Ala Ile Glu Val Leu Thr Glu Ala Arg Glu Trp Pro Arg Thr		
3395	3400	3405
Gly Arg Pro Arg Arg Ala Gly Val Ser Ser Phe Gly Ala Ser Gly Thr		
3410	3415	3420
Asn Ala His Leu Ile Ile Glu Glu Gly Pro Ala Glu Glu Ala Val Asp		
3425	3430	3435
Glu Glu Val Ala Ser Val Val Pro Leu Val Val Ser Ala Arg Ser Ala		
3445	3450	3455
Gly Ser Leu Ala Gly Gln Ala Gly Arg Leu Ala Ala Val Leu Glu Asn		
3460	3465	3470
Glu Ser Leu Ala Gly Val Ala Gly Ala Leu Val Ser Gly Arg Ala Thr		
3475	3480	3485
Leu Asn Glu Arg Ala Val Val Ile Ala Gly Ser Arg Asp Glu Ala Gln		
3490	3495	3500
Asp Gly Leu Gln Ala Leu Ala Arg Gly Glu Asn Ala Pro Gly Val Val		
3505	3510	3515
Thr Gly Thr Ala Gly Lys Pro Gly Lys Val Val Trp Val Phe Pro Gly		
3525	3530	3535
Gln Gly Ser Gln Trp Met Gly Met Gly Arg Asp Leu Leu Asp Ser Ser		
3540	3545	3550
Pro Val Phe Ala Ala Arg Ile Lys Glu Cys Ala Ala Leu Glu Gln		
3555	3560	3565
Trp Thr Asp Trp Ser Leu Leu Asp Val Leu Arg Gly Asp Ala Asp Leu		
3570	3575	3580
Leu Asp Arg Val Asp Val Val Gln Pro Ala Ser Phe Ala Met Met Val		
3585	3590	3595
Gly Leu Ala Ala Val Trp Thr Ser Leu Gly Val Thr Pro Asp Ala Val		
3605	3610	3615

Leu Gly His Ser Gln Gly Glu Ile Ala Ala Ala Cys Val Ser Gly Ala
 3620 3625 3630

 Leu Ser Leu Asp Asp Ala Ala Lys Val Val Ala Leu Arg Ser Gln Ala
 3635 3640 3645

 Ile Ala Gly Glu Leu Ala Gly Arg Gly Met Ala Ser Val Ala Leu
 3650 3655 3660

 Ser Glu Glu Asp Ala Val Ala Arg Leu Thr Pro Trp Ala Asn Arg Val
 3665 3670 3675 3680

 Glu Val Ala Ala Val Asn Ser Pro Ser Ser Val Val Ile Ala Gly Asp
 3685 3690 3695

 Ala Gln Ala Leu Asp Glu Ala Leu Glu Ala Leu Ala Gly Asp Gly Val
 3700 3705 3710

 Arg Val Arg Arg Val Ala Val Asp Tyr Ala Ser His Thr Arg His Val
 3715 3720 3725

 Glu Ala Ile Ala Glu Thr Leu Ala Lys Thr Leu Ala Gly Ile Asp Ala
 3730 3735 3740

 Arg Val Pro Ala Ile Pro Phe Tyr Ser Thr Val Leu Gly Thr Trp Ile
 3745 3750 3755 3760

 Glu Gln Ala Val Val Asp Ala Gly Tyr Trp Tyr Arg Asn Leu Arg Gln
 3765 3770 3775

 Gln Val Arg Phe Gly Pro Ser Val Ala Asp Leu Ala Gly Leu Gly His
 3780 3785 3790

 Thr Val Phe Val Glu Ile Ser Ala His Pro Val Leu Val Gln Pro Leu
 3795 3800 3805

 Ser Glu Ile Ser Asp Asp Ala Val Val Thr Gly Ser Leu Arg Arg Asp
 3810 3815 3820

 Asp Gly Gly Leu Arg Arg Leu Leu Ala Ser Ala Ala Glu Leu Tyr Val
 3825 3830 3835 3840

 Arg Gly Val Ala Val Asp Trp Thr Ala Ala Val Pro Ala Ala Gly Trp
 3845 3850 3855

 Val Asp Leu Pro Thr Tyr Ala Phe Asp Arg Arg His Phe Trp Leu His
 3860 3865 3870

 Glu Ala Glu Thr Ala Glu Ala Ala Glu Gly Met Asp Gly Glu Phe Trp
 3875 3880 3885

 Thr Ala Ile Glu Gln Ser Asp Val Asp Ser Leu Ala Glu Leu Leu Glu
 3890 3895 3900

 Leu Val Pro Glu Gln Arg Gly Ala Leu Ser Thr Val Val Pro Val Leu
 3905 3910 3915 3920

 Ala Gln Trp Arg Asp Arg Arg Glu Arg Ser Thr Ala Glu Lys Leu
 3925 3930 3935

Arg Tyr Gln Val Thr Trp Gln Pro Leu Glu Arg Glu Ala Ala Gly Val
 3940 3945 3950

 Pro Gly Gly Arg Trp Leu Ala Val Val Pro Ala Gly Thr Thr Asp Ala
 3955 3960 3965

 Leu Leu Lys Glu Leu Thr Gly Gln Gly Leu Asp Ile Val Arg Leu Glu
 3970 3975 3980

 Ile Glu Glu Ala Ser Arg Ala Gln Leu Ala Glu Gln Leu Arg Asn Val
 3985 3990 3995 4000

 Leu Ala Glu His Asp Leu Thr Gly Val Leu Ser Leu Leu Ala Leu Asp
 4005 4010 4015

 Gly Gly Pro Ala Asp Ala Ala Glu Ile Thr Ala Ser Thr Leu Ala Leu
 4020 4025 4030

 Val Gln Ala Leu Gly Asp Thr Thr Ser Ala Pro Leu Trp Cys Leu
 4035 4040 4045

 Thr Ser Gly Ala Val Asn Ile Gly Ile Gln Asp Ala Val Thr Ala Pro
 4050 4055 4060

 Ala Gln Ala Ala Val Trp Gly Leu Gly Arg Ala Val Ala Leu Glu Arg
 4065 4070 4075 4080

 Leu Asp Arg Trp Gly Gly Leu Val Asp Leu Pro Ala Ala Ile Asp Ala
 4085 4090 4095

 Arg Thr Ala Gln Ala Leu Leu Gly Val Leu Asn Gly Ala Ala Gly Glu
 4100 4105 4110

 Asp Gln Leu Ala Val Arg Arg Ser Gly Val Tyr Arg Arg Arg Leu Val
 4115 4120 4125

 Arg Lys Pro Val Pro Glu Ser Ala Thr Ser Arg Trp Glu Pro Arg Gly
 4130 4135 4140

 Thr Val Leu Val Thr Gly Gly Ala Glu Gly Leu Gly Arg His Ala Ser
 4145 4150 4155 4160

 Val Trp Leu Ala Gln Ser Gly Ala Glu Arg Leu Ile Val Thr Gly Thr
 4165 4170 4175

 Asp Gly Val Asp Glu Leu Thr Ala Glu Leu Ala Glu Phe Gly Thr Thr
 4180 4185 4190

 Val Glu Phe Cys Ala Asp Thr Asp Arg Asp Ala Ile Ala Gln Leu Val
 4195 4200 4205

 Ala Asp Ser Glu Val Thr Ala Val Val His Ala Ala Asp Ile Ala Gln
 4210 4215 4220

 Thr Ser Ser Val Asp Asp Thr Gly Val Ala Asp Leu Asp Glu Val Phe
 4225 4230 4235 4240

 Ala Ala Lys Val Thr Thr Ala Val Trp Leu Asp Gln Leu Phe Glu Asp
 4245 4250 4255

 Thr Pro Leu Asp Ala Phe Val Val Phe Ser Ser Ile Ala Gly Ile Trp

4260	4265	4270
Gly Gly Gly Gly Gln Gly Pro Ala Gly Ala Ala Asn Ala Val Leu Asp		
4275	4280	4285
Ala Leu Val Glu Trp Arg Arg Ala Arg Gly Leu Lys Ala Thr Ser Ile		
4290	4295	4300
Ala Trp Gly Ala Leu Asp Gln Ile Gly Ile Gly Met Asp Glu Ala Ala		
4305	4310	4315
Leu Ala Gln Leu Arg Arg Gly Val Ile Pro Met Ala Pro Pro Leu		
4325	4330	4335
Ala Val Thr Ala Met Val Gln Ala Val Ala Gly Asn Glu Lys Ala Val		
4340	4345	4350
Ala Val Ala Asp Met Asp Trp Ala Ala Phe Ile Pro Ala Phe Thr Ser		
4355	4360	4365
Val Arg Pro Ser Pro Leu Phe Ala Asp Leu Pro Glu Ala Lys Ala Ile		
4370	4375	4380
Leu Arg Ala Ala Gln Asp Asp Gly Glu Asp Gly Asp Thr Ala Ser Ser		
4385	4390	4395
4400		
Leu Ala Asp Ser Leu Arg Ala Val Pro Asp Ala Glu Gln Asn Arg Ile		
4405	4410	4415
Leu Leu Lys Leu Val Arg Gly His Ala Ser Thr Val Leu Gly His Ser		
4420	4425	4430
Gly Ala Glu Gly Ile Gly Pro Arg Gln Ala Phe Gln Glu Val Gly Phe		
4435	4440	4445
Asp Ser Leu Ala Ala Val Asn Leu Arg Asn Ser Leu His Ala Ala Thr		
4450	4455	4460
Gly Leu Arg Leu Pro Ala Thr Leu Ile Phe Asp Tyr Pro Thr Pro Glu		
4465	4470	4475
4480		
Ala Leu Val Gly Tyr Leu Arg Val Glu Leu Leu Arg Glu Ala Asp Asp		
4485	4490	4495
Gly Leu Asp Gly Arg Glu Asp Asp Leu Arg Arg Val Leu Ala Ala Val		
4500	4505	4510
Pro Phe Ala Arg Phe Lys Glu Ala Gly Val Leu Asp Thr Leu Leu Gly		
4515	4520	4525
Leu Ala Asp Thr Gly Thr Glu Pro Gly Thr Asp Ala Glu Thr Thr Glu		
4530	4535	4540
Ala Ala Pro Ala Ala Asp Asp Ala Glu Leu Ile Asp Ala Leu Asp Ile		
4545	4550	4555
4560		
Ser Gly Leu Val Gln Arg Ala Leu Gly Gln Thr Ser		
4565	4570	

<211> 5069

<212> PRT

<213> Amycolatopsis mediterranei

<400> 5

Met Ala Asn Gln Ser Trp Arg Lys Asn Met Ser Ala Pro Asn Glu Gln			
1	5	10	15

Ile Val Asp Ala Leu Arg Ala Ser Leu Lys Glu Asn Val Arg Leu Gln			
20	25	30	

Gln Glu Asn Ser Ala Leu Ala Ala Ala Ala Glu Pro Val Ala Ile			
35	40	45	

Val Ser Met Ala Cys Arg Tyr Ala Gly Gly Ile Arg Gly Pro Glu Asp			
50	55	60	

Phe Trp Arg Val Val Ser Glu Gly Ala Asp Val Tyr Thr Gly Phe Pro			
65	70	75	80

Glu Asp Arg Gly Trp Asp Val Glu Gly Leu Tyr His Pro Asp Pro Asp			
85	90	95	

Asn Pro Gly Thr Thr Tyr Val Arg Glu Gly Ala Phe Leu Gln Asp Ala			
100	105	110	

Ala Gln Phe Asp Ala Gly Phe Phe Gly Ile Ser Pro Arg Glu Ala Leu			
115	120	125	

Ala Met Asp Pro Gln Gln Arg Gln Leu Leu Glu Val Ser Trp Glu Thr			
130	135	140	

Leu Glu Arg Ala Gly Ile Asp Pro His Ser Val Arg Gly Ser Asp Ile			
145	150	155	160

Gly Val Tyr Ala Gly Val Val His Gln Asp Tyr Ala Pro Asp Leu Ser			
165	170	175	

Gly Phe Glu Gly Phe Met Ser Leu Glu Arg Ala Leu Gly Thr Ala Gly			
180	185	190	

Gly Val Ala Ser Gly Arg Val Ala Tyr Thr Leu Gly Leu Glu Gly Pro			
195	200	205	

Ala Val Thr Val Asp Thr Met Cys Ser Ser Ser Leu Val Ala Ile His			
210	215	220	

Leu Ala Ala Gln Ala Leu Arg Arg Gly Glu Cys Ser Met Ala Leu Ala			
225	230	235	240

Gly Gly Ser Thr Val Met Ala Thr Pro Gly Gly Phe Val Gly Phe Ala			
245	250	255	

Arg Gln Arg Ala Leu Ala Phe Asp Gly Arg Cys Lys Ser Tyr Ala Ala			
260	265	270	

Ala Ala Asp Gly Ser Gly Trp Ala Glu Gly Val Gly Val Leu Leu Leu			
275	280	285	

Glu Arg Leu Ser Val Ala Arg Glu Arg Gly His Gln Val Leu Ala Val			
290	295	300	

Ile Arg Gly Ser Ala Val Asn Gln Asp Gly Ala Ser Asn Gly Leu Thr
 305 310 315 320

Ala Pro Asn Gly Pro Ala Gln Gln Arg Val Ile Arg Lys Ala Leu Ala
 325 330 335

Ser Ala Gly Leu Thr Pro Ser Asp Val Asp Thr Val Glu Gly His Gly
 340 345 350

Thr Gly Thr Val Leu Gly Asp Pro Ile Glu Val Gln Ala Leu Leu Ala
 355 360 365

Thr Tyr Gly Gln Gly Arg Asp Pro Gln Gln Pro Leu Trp Leu Gly Ser
 370 375 380

Val Lys Ser Val Val Gly His Thr Gln Ala Ala Ser Gly Val Ala Gly
 385 390 395 400

Val Ile Lys Met Val Gln Ser Leu Arg His Gly Gln Leu Pro Ala Thr
 405 410 415

Gln His Val Asp Ala Pro Thr Pro Gln Val Asp Trp Ser Ala Gly Ala
 420 425 430

Ile Glu Leu Leu Ala Glu Gly Arg Glu Trp Pro Arg Asn Gly His Pro
 435 440 445

Arg Arg Gly Gly Ile Ser Ser Phe Gly Ala Ser Gly Thr Asn Ala His
 450 455 460

Met Ile Leu Glu Glu Ala Pro Glu Asp Glu Pro Val Thr Glu Ala Pro
 465 470 475 480

Ala Pro Thr Gly Val Val Pro Leu Val Val Ser Ala Ala Thr Ala Ala
 485 490 495

Ser Leu Ala Ala Gln Ala Gly Arg Leu Ala Glu Val Gly Asp Val Ser
 500 505 510

Leu Ala Asp Val Ala Gly Thr Leu Val Ser Gly Arg Ala Met Leu Ser
 515 520 525

Glu Arg Ala Val Val Ala Gly Ser His Glu Glu Ala Val Thr Gly
 530 535 540

Leu Arg Ala Leu Ala Arg Gly Glu Ser Ala Pro Gly Leu Leu Ser Gly
 545 550 555 560

Arg Gly Ser Gly Val Pro Gly Lys Val Val Trp Val Phe Pro Gly Gln
 565 570 575

Gly Thr Gln Trp Ala Gly Met Gly Arg Glu Leu Leu Asp Ser Ser Glu
 580 585 590

Val Phe Ala Ala Arg Ile Ala Glu Cys Glu Thr Ala Leu Gly Arg Trp
 595 600 605

Val Asp Trp Ser Leu Thr Asp Val Leu Arg Gly Glu Ala Asp Leu Leu
 610 615 620

Asp Arg Val Asp Val Val Gln Pro Ala Ser Phe Ala Val Met Val Gly
 625 630 635 640
 Leu Ala Ala Val Trp Ala Ser Leu Gly Val Glu Pro Glu Ala Val Val
 645 650 655
 Gly His Ser Gln Gly Glu Ile Ala Ala Ala Cys Val Ser Gly Ala Leu
 660 665 670
 Ser Leu Glu Asp Ala Ala Lys Val Val Ala Leu Arg Ser Gln Ala Ile
 675 680 685
 Ala Ala Ser Leu Ala Gly Arg Gly Gly Met Ala Ser Val Ala Leu Ser
 690 695 700
 Glu Glu Asp Ala Thr Ala Arg Leu Glu Pro Trp Ala Gly Arg Val Glu
 705 710 715 720
 Val Ala Ala Val Asn Gly Pro Thr Ser Val Val Ile Ala Gly Asp Ala
 725 730 735
 Glu Ala Leu Asp Glu Ala Leu Asp Ala Leu Asp Asp Gln Gly Val Arg
 740 745 750
 Ile Arg Arg Val Ala Val Asp Tyr Ala Ser His Thr Arg His Val Glu
 755 760 765
 Ala Ala Arg Asp Ala Leu Ala Glu Met Leu Gly Gly Ile Arg Ala Gln
 770 775 780
 Ala Pro Glu Val Pro Phe Tyr Ser Thr Val Thr Gly Gly Trp Val Glu
 785 790 795 800
 Asp Ala Gly Val Leu Asp Gly Gly Tyr Trp Tyr Arg Asn Leu Arg Arg
 805 810 815
 Gln Val Arg Phe Gly Pro Ala Val Ala Glu Leu Ile Glu Gln Gly His
 820 825 830
 Arg Val Phe Val Glu Val Ser Ala His Pro Val Leu Val Gln Pro Ile
 835 840 845
 Asn Glu Leu Val Asp Asp Thr Glu Ala Val Val Thr Gly Thr Leu Arg
 850 855 860
 Arg Glu Asp Gly Gly Leu Arg Arg Leu Leu Ala Ser Ala Ala Glu Leu
 865 870 875 880
 Phe Val Arg Gly Val Thr Val Asp Trp Ser Gly Val Leu Pro Pro Ser
 885 890 895
 Arg Arg Val Glu Leu Pro Thr Tyr Ala Phe Asp His Gln His Tyr Trp
 900 905 910
 Leu Gln Met Gly Gly Ser Ala Thr Asp Ala Val Ser Leu Gly Leu Ala
 915 920 925
 Gly Ala Asp His Pro Leu Leu Gly Ala Val Val Pro Leu Pro Gln Ser
 930 935 940
 Asp Gly Leu Val Phe Thr Ser Arg Leu Ser Leu Lys Ser His Pro Trp

945	950	955	960
Leu Ala Gly His Ala Ile Gly Gly Val Val Leu Ile Pro Gly Thr Val			
965		970	975
Tyr Val Asp Leu Ala Leu Arg Ala Gly Asp Glu Leu Gly Phe Gly Val			
980		985	990
Leu Glu Glu Leu Val Ile Glu Ala Pro Leu Val Leu Gly Glu Arg Gly			
995	1000	1005	
Gly Val Arg Val Gln Val Ala Val Ser Gly Pro Asn Glu Thr Gly Ser			
1010	1015	1020	
Arg Ala Val Asp Val Phe Ser Met Arg Glu Asp Gly Asp Glu Trp Thr			
1025	1030	1035	1040
Arg His Ala Thr Gly Leu Leu Gly Ala Ser Thr Ser Arg Glu Pro Ser			
1045		1050	1055
Arg Phe Asp Phe Ala Ala Trp Pro Pro Ala Gly Ala Glu Pro Ile Asp			
1060		1065	1070
Val Glu Asn Phe Tyr Thr Asp Leu Thr Glu Arg Gly Tyr Ala Tyr Ser			
1075	1080	1085	
Gly Ala Phe Gln Gly Met Arg Ala Val Trp Arg Arg Gly Asp Glu Val			
1090	1095	1100	
Phe Ala Glu Val Ala Leu Pro Asp Asp His Arg Glu Asp Ala Gly Lys			
1105	1110	1115	1120
Phe Gly Leu His Pro Ala Leu Leu Asp Ala Ala Leu His Thr Asn Ala			
1125		1130	1135
Phe Ala Asn Pro Asp Asp Arg Ser Val Leu Pro Phe Ala Trp Asn			
1140		1145	1150
Gly Leu Val Leu His Ala Val Gly Ala Ser Ala Leu Arg Val Arg Val			
1155	1160	1165	
Ala Pro Gly Gly Pro Asp Ala Leu Thr Phe Gln Ala Ala Asp Glu Thr			
1170	1175	1180	
Gly Gly Leu Val Val Thr Met Asp Ser Leu Val Ser Arg Glu Val Ser			
1185	1190	1195	1200
Ala Ala Gln Leu Glu Thr Ala Ala Gly Glu Glu Arg Asp Ser Leu Phe			
1205		1210	1215
Gln Val Asp Trp Ile Glu Val Pro Ala Thr Glu Thr Ala Ala Thr Glu			
1220		1225	1230
His Ala Glu Val Leu Glu Ala Phe Gly Glu Ala Ala Pro Leu Glu Leu			
1235	1240	1245	
Thr Ser Arg Val Leu Glu Ala Val Gln Ser Trp Leu Ala Asp Ala Ala			
1250	1255	1260	
Asp Glu Ala Arg Leu Val Val Val Thr Arg Gly Ala Val Arg Glu Val			
1265	1270	1275	1280

Thr Asp Pro Ala Gly Ala Ala Val Trp Gly Leu Val Arg Ala Ala Gln
 1285 1290 1295

 Ala Glu Asn Pro Gly Arg Ile Ile Leu Val Asp Thr Asp Gly Asp Val
 1300 1305 1310

 Pro Leu Gly Ala Val Leu Ala Ser Gly Glu Pro Gln Leu Ala Val Arg
 1315 1320 1325

 Gly Asn Ala Phe Ser Val Pro Arg Leu Ala Arg Ala Thr Gly Glu Val
 1330 1335 1340

 Pro Glu Ala Pro Ala Val Phe Ser Pro Glu Gly Thr Val Leu Leu Thr
 1345 1350 1355 1360

 Gly Gly Thr Gly Ser Leu Gly Gly Leu Val Ala Lys His Leu Val Ala
 1365 1370 1375

 Arg His Gly Val Arg Arg Leu Val Leu Ala Ser Arg Arg Gly Val Ala
 1380 1385 1390

 Ala Glu Asp Leu Val Thr Glu Leu Thr Glu Gln Gly Ala Thr Val Ser
 1395 1400 1405

 Val Val Ala Cys Asp Val Ser Asp Arg Asp Gln Val Ala Ala Leu Leu
 1410 1415 1420

 Ala Glu His Arg Pro Thr Gly Ile Val His Leu Ala Gly Leu Leu Asp
 1425 1430 1435 1440

 Asp Gly Val Ile Gly Ala Leu Asn Arg Glu Arg Leu Ala Gly Val Phe
 1445 1450 1455

 Ala Pro Lys Val Asp Ala Val Gln His Leu Asp Glu Leu Thr Arg Asp
 1460 1465 1470

 Leu Gly Leu Asp Ala Phe Val Val Phe Ser Ser Ala Ala Ala Leu Met
 1475 1480 1485

 Gly Ser Ala Gly Gln Gly Asn Tyr Ala Ala Ala Asn Ala Phe Leu Asp
 1490 1495 1500

 Gly Leu Met Ala Gly Arg Arg Ala Ala Gly Leu Pro Gly Val Ser Leu
 1505 1510 1515 1520

 Ala Trp Gly Leu Trp Glu Gln Ala Asp Gly Leu Thr Ala Asn Leu Ser
 1525 1530 1535

 Ala Thr Asp Gln Ala Arg Met Ser Arg Gly Gly Val Leu Pro Met Thr
 1540 1545 1550

 Pro Ala Glu Ala Leu Asp Ile Phe Asp Ile Gly Leu Ala Ala Glu Gln
 1555 1560 1565

 Ala Leu Leu Val Pro Ile Lys Leu Asp Leu Arg Thr Leu Arg Gly Gln
 1570 1575 1580

 Ala Thr Ala Gly Gly Glu Val Pro His Leu Leu Arg Gly Leu Val Arg
 1585 1590 1595 1600

Ala Ser Arg Arg Val Thr Arg Thr Ala Ala Ala Ser Gly Gly Gly Gly
 1605 1610 1615

 Leu Val His Lys Leu Ala Gly Arg Pro Ala Glu Glu Gln Glu Ala Val
 1620 1625 1630

 Leu Leu Gly Ile Val Gln Ala Glu Ala Ala Val Leu Gly Phe Asn
 1635 1640 1645

 Ala Pro Glu Leu Ala Gln Gly Thr Arg Gly Phe Ser Asp Leu Gly Phe
 1650 1655 1660

 Asp Ser Leu Thr Ala Val Glu Leu Arg Asn Arg Leu Ser Ala Ala Thr
 1665 1670 1675 1680

 Gly Val Lys Leu Pro Ala Thr Leu Val Phe Asp Tyr Pro Thr Pro Val
 1685 1690 1695

 Ala Leu Ala Arg His Leu Arg Glu Glu Leu Gly Glu Thr Val Ala Gly
 1700 1705 1710

 Ala Pro Ala Thr Pro Val Thr Thr Val Ala Asp Ala Gly Glu Pro Ile
 1715 1720 1725

 Ala Ile Val Gly Met Ala Cys Arg Leu Pro Gly Gly Val Met Ser Pro
 1730 1735 1740

 Asp Asp Leu Trp Arg Met Val Ala Glu Gly Arg Asp Gly Met Ser Pro
 1745 1750 1755 1760

 Phe Pro Gly Asp Arg Gly Trp Asp Leu Asp Gly Leu Phe Asp Ser Asp
 1765 1770 1775

 Pro Glu Arg Pro Gly Thr Ala Tyr Ile Arg Gln Gly Gly Phe Leu His
 1780 1785 1790

 Glu Ala Ala Leu Phe Asp Pro Gly Phe Gly Ile Ser Pro Arg Glu
 1795 1800 1805

 Ala Leu Ala Met Asp Pro Gln Gln Arg Leu Leu Leu Glu Ala Ser Trp
 1810 1815 1820

 Glu Ala Leu Glu Arg Ala Gly Ile Asp Pro Thr Lys Ala Arg Gly Asp
 1825 1830 1835 1840

 Ala Val Gly Val Phe Ser Gly Val Ser Ile His Asp Tyr Leu Glu Ser
 1845 1850 1855

 Leu Ser Asn Met Pro Ala Glu Leu Glu Gly Phe Val Thr Thr Ala Thr
 1860 1865 1870

 Ala Gly Ser Val Ala Ser Gly Arg Val Ser Tyr Thr Phe Gly Phe Glu
 1875 1880 1885

 Gly Pro Ala Val Thr Val Asp Thr Ala Cys Ser Ser Ser Leu Val Ala
 1890 1895 1900

 Ile His Leu Ala Ala Gln Ala Leu Arg Gln Gly Glu Cys Thr Met Ala
 1905 1910 1915 1920

 Leu Ala Gly Gly Val Ala Val Met Gly Ser Pro Ile Gly Val Ile Gly

1925	1930	1935
Met Ser Arg Gln Arg Gly Met Ala Glu Asp Gly Arg Val Lys Ala Phe 1940	1945	1950
Ala Asp Gly Ala Asp Gly Thr Val Leu Ser Glu Gly Val Gly Ile Val 1955	1960	1965
Val Leu Glu Arg Leu Ser Val Ala Arg Glu Arg Gly His Arg Val Leu 1970	1975	1980
Ala Val Leu Arg Gly Ser Ala Val Asn Gln Asp Gly Ala Ser Asn Gly 1985	1990	1995
Leu Thr Ala Pro Asn Gly Pro Ser Gln Gln Arg Val Ile Arg Ser Ala 2005	2010	2015
Leu Ala Gly Ala Gly Leu Gln Pro Ser Glu Val Asp Val Val Glu Ala 2020	2025	2030
His Gly Thr Gly Thr Ala Leu Gly Glu Pro Ile Glu Ala Gln Ala Leu 2035	2040	2045
Leu Ala Thr Tyr Gly Lys Ser Arg Glu Thr Pro Leu Trp Leu Gly Ser 2050	2055	2060
Leu Lys Ser Asn Ile Gly His Thr Gln Ala Ala Ala Gly Val Ala Ala 2065	2070	2075
Val Ile Lys Met Val Gln Ala Leu Arg Gln Asp Thr Leu Pro Pro Thr 2085	2090	2095
Leu His Val Gln Glu Pro Thr Lys Gln Val Asp Trp Ser Ala Gly Ala 2100	2105	2110
Val Glu Leu Leu Thr Glu Gly Arg Glu Trp Ala Arg Asn Gly His Pro 2115	2120	2125
Arg Arg Ala Gly Val Ser Ser Phe Gly Ile Ser Gly Thr Asn Ala His 2130	2135	2140
Leu Ile Leu Glu Glu Ala Pro Ala Asp Asp Thr Ala Glu Ala Asp Val 2145	2150	2155
Pro Asp Ala Val Val Pro Val Val Ile Ser Ala Arg Ser Thr Gly Ser 2165	2170	2175
Leu Ala Gly Gln Ala Gly Arg Leu Ala Ala Phe Leu Asp Gly Asp Val 2180	2185	2190
Pro Leu Thr Arg Val Ala Gly Ala Leu Leu Ser Thr Arg Ala Thr Leu 2195	2200	2205
Thr Asp Arg Ala Val Val Ala Gly Ser Ala Glu Glu Ala Arg Ala 2210	2215	2220
Gly Leu Thr Ala Leu Ala Arg Gly Glu Ser Ala Ser Gly Leu Val Thr 2225	2230	2235
Gly Thr Ala Gly Met Pro Gly Lys Thr Val Trp Val Phe Pro Gly Gln 2245	2250	2255

Gly Thr Gln Trp Ala Gly Met Gly Arg Glu Leu Leu Glu Ala Ser Pro
 2260 2265 2270

 Val Phe Ala Glu Arg Ile Glu Glu Cys Ala Ala Ala Leu Gln Pro Trp
 2275 2280 2285

 Ile Asp Trp Ser Leu Leu Asp Val Leu Arg Gly Glu Gly Glu Leu Asp
 2290 2295 2300

 Arg Val Asp Val Leu Gln Pro Ala Cys Phe Ala Val Met Val Gly Leu
 2305 2310 2315 2320

 Ala Ala Val Trp Ala Ser Val Gly Val Val Pro Asp Ala Val Leu Gly
 2325 2330 2335

 His Ser Gln Gly Glu Ile Ala Ala Ala Cys Val Ser Gly Ala Leu Ser
 2340 2345 2350

 Leu Glu Asp Ala Ala Lys Val Val Ala Leu Arg Ser Gln Ala Ile Ala
 2355 2360 2365

 Ala Glu Leu Ser Gly Arg Gly Gly Met Ala Ser Ile Gln Leu Ser His
 2370 2375 2380

 Asp Glu Val Ala Ala Arg Leu Ala Pro Trp Ala Gly Arg Val Glu Ile
 2385 2390 2395 2400

 Ala Ala Val Asn Gly Pro Ala Ser Val Val Ile Ala Gly Asp Ala Glu
 2405 2410 2415

 Ala Leu Thr Glu Ala Val Glu Val Leu Gly Gly Arg Arg Val Ala Val
 2420 2425 2430

 Asp Tyr Ala Ser His Thr Arg His Val Glu Asp Ile Gln Asp Thr Leu
 2435 2440 2445

 Ala Glu Thr Leu Ala Gly Ile Asp Ala Gln Ala Pro Val Val Pro Phe
 2450 2455 2460

 Tyr Ser Thr Val Ala Gly Glu Trp Ile Thr Asp Ala Gly Val Val Asp
 2465 2470 2475 2480

 Gly Gly Tyr Trp Tyr Arg Asn Leu Arg Asn Gln Val Gly Phe Gly Pro
 2485 2490 2495

 Ala Val Ala Glu Leu Ile Glu Gln Gly His Gly Val Phe Val Glu Val
 2500 2505 2510

 Ser Ala His Pro Val Leu Val Gln Pro Ile Ser Glu Leu Thr Asp Ala
 2515 2520 2525

 Val Val Thr Gly Thr Leu Arg Arg Asp Asp Gly Gly Val Arg Arg Leu
 2530 2535 2540

 Leu Thr Ser Met Ala Glu Leu Phe Val Arg Gly Val Pro Val Asp Trp
 2545 2550 2555 2560

 Ala Thr Met Ala Pro Pro Ala Arg Val Glu Leu Pro Thr Tyr Ala Phe
 2565 2570 2575

Asp His Gln His Phe Trp Leu Ser Pro Pro Ala Val Ala Asp Ala Pro
 2580 2585 2590

 Ala Leu Gly Leu Ala Gly Ala Asp His Pro Leu Leu Gly Ala Val Leu
 2595 2600 2605

 Pro Leu Pro Gln Ser Asp Gly Leu Val Phe Thr Ser Arg Leu Ser Val
 2610 2615 2620

 Arg Thr His Pro Trp Leu Ala Asp Gly Val Pro Ala Ala Ala Leu Val
 2625 2630 2635 2640

 Glu Leu Ala Val Arg Ala Gly Asp Glu Ala Gly Cys Pro Val Leu Ala
 2645 2650 2655

 Asp Leu Thr Val Glu Lys Leu Leu Val Leu Pro Glu Ser Gly Gly Leu
 2660 2665 2670

 Arg Val Gln Val Ile Val Ser Gly Glu Arg Thr Val Glu Val Tyr Ser
 2675 2680 2685

 Gln Leu Glu Gly Ala Glu Asp Trp Ile Arg Asn Ala Thr Gly His Leu
 2690 2695 2700

 Ser Ala Thr Ala Pro Ala His Glu Ala Phe Asp Phe Thr Ala Trp Pro
 2705 2710 2715 2720

 Pro Ala Gly Ala Gln Gln Val Asp Gly Leu Trp Arg Arg Gly Asp Glu
 2725 2730 2735

 Ile Phe Ala Glu Val Ala Leu Pro Glu Glu Leu Asp Ala Gly Ala Phe
 2740 2745 2750

 Gly Ile His Pro Phe Leu Leu Asp Ala Ala Val Gln Pro Val Leu Ala
 2755 2760 2765

 Asp Asp Glu Gln Pro Ala Glu Trp Arg Ser Leu Val Leu His Ala Ala
 2770 2775 2780

 Gly Ala Ser Ala Leu Arg Val Arg Leu Val Pro Gly Gly Ala Leu Gln
 2785 2790 2795 2800

 Ala Ala Asp Glu Thr Gly Leu Val Leu Thr Ala Asp Ser Val Ala
 2805 2810 2815

 Gly Arg Glu Leu Ser Ala Gly Lys Thr Arg Ala Gly Ser Leu Tyr Arg
 2820 2825 2830

 Val Asp Trp Thr Glu Val Ser Ile Ala Asp Ser Ala Val Pro Ala Asn
 2835 2840 2845

 Ile Glu Val Val Glu Ala Phe Gly Glu Pro Leu Glu Leu Thr Gly
 2850 2855 2860

 Arg Val Leu Glu Ala Val Gln Thr Trp Leu Val Thr Ala Ala Asp Asp
 2865 2870 2875 2880

 Ala Arg Leu Val Val Val Thr Arg Gly Ala Val Arg Glu Val Thr Asp
 2885 2890 2895

 Pro Ala Gly Ala Ala Val Trp Gly Leu Val Arg Ala Ala Gln Ala Glu

2900	2905	2910
Asn Pro Gly Arg Ile Phe Leu Ile Asp Thr Asp Gly Glu Ile Pro Ala		
2915	2920	2925
Leu Thr Gly Asp Glu Pro Glu Ile Ala Val Arg Gly Gly Lys Phe Phe		
2930	2935	2940
Val Pro Arg Ile Thr Arg Ala Glu Pro Ser Gly Ala Ala Val Phe Arg		
2945	2950	2955
Pro Asp Gly Thr Val Leu Ile Ser Gly Ala Gly Ala Leu Gly Gly Leu		
2965	2970	2975
Val Ala Arg Arg Leu Val Glu Arg His Gly Val Arg Lys Leu Val Leu		
2980	2985	2990
Ala Ser Arg Arg Gly Arg Asp Ala Asp Gly Val Ala Asp Leu Val Ala		
2995	3000	3005
Asp Leu Ala Ala Asp Val Ser Val Val Ala Cys Asp Val Ser Asp Arg		
3010	3015	3020
Ala Gln Val Ala Ala Leu Leu Asp Glu His Arg Pro Thr Ala Val Val		
3025	3030	3035
His Thr Ala Gly Val Ile Asp Ala Gly Val Ile Glu Thr Leu Asp Arg		
3045	3050	3055
Asp Arg Leu Ala Thr Val Phe Ala Pro Lys Val Asp Ala Val Arg His		
3060	3065	3070
Leu Asp Glu Leu Thr Arg Asp Arg Asp Leu Asp Ala Phe Val Val Tyr		
3075	3080	3085
Ser Ser Val Ser Ala Val Phe Met Gly Ala Gly Ser Gly Ser Tyr Ala		
3090	3095	3100
Ala Ala Asn Ala Phe Leu Asp Gly Leu Met Ala Asn Arg Arg Ala Ala		
3105	3110	3115
Gly Leu Pro Gly Leu Ser Leu Ala Trp Gly Leu Trp Asp Gln Ser Thr		
3125	3130	3135
Gly Met Ala Ala Gly Thr Asp Glu Ala Thr Arg Ala Arg Met Ser Arg		
3140	3145	3150
Arg Gly Gly Leu Gln Ile Met Thr Gln Ala Glu Gly Met Asp Leu Phe		
3155	3160	3165
Asp Ala Ala Leu Ser Ser Ala Glu Ser Leu Leu Val Pro Ala Lys Leu		
3170	3175	3180
Asp Leu Arg Gly Val Arg Ala Asp Ala Ala Gly Gly Val Val Pro		
3185	3190	3195
His Met Leu Arg Gly Leu Val Arg Ala Gly Arg Ala Gln Ala Arg Ala		
3205	3210	3215
Ala Ser Thr Val Asp Asn Gly Leu Ala Gly Arg Leu Ala Gly Leu Ala		
3220	3225	3230

Pro Ala Asp Gln Leu Thr Leu Leu Leu Asp Leu Val Arg Ala Gln Val
 3235 3240 3245

 Ala Ala Val Leu Gly His Ala Asp Ala Ser Ala Val Arg Val Asp Thr
 3250 3255 3260

 Ala Phe Lys Asp Ala Gly Phe Asp Ser Leu Thr Ala Val Glu Leu Arg
 3265 3270 3275 3280

 Asn Arg Met Arg Thr Ala Thr Gly Leu Lys Leu Pro Ala Thr Leu Val
 3285 3290 3295

 Phe Asp Tyr Pro Asn Pro Gln Ala Leu Ala Arg His Leu Arg Asp Glu
 3300 3305 3310

 Leu Gly Gly Ala Ala Gln Thr Pro Val Thr Thr Ala Ala Ala Lys Ala
 3315 3320 3325

 Asp Leu Asp Glu Pro Ile Ala Ile Val Gly Met Ala Cys Arg Leu Pro
 3330 3335 3340

 Gly Gly Val Ala Gly Pro Glu Asp Leu Trp Arg Leu Val Ala Glu Gly
 3345 3350 3355 3360

 Arg Asp Ala Val Ser Ser Phe Pro Thr Asp Arg Gly Trp Asp Thr Asp
 3365 3370 3375

 Ser Leu Tyr Asp Pro Asp Pro Ala Arg Pro Gly Lys Thr Tyr Thr Arg
 3380 3385 3390

 His Gly Gly Phe Leu His Glu Ala Gly Leu Phe Asp Ala Gly Phe Phe
 3395 3400 3405

 Gly Ile Ser Pro Arg Glu Ala Val Ala Met Asp Pro Gln Gln Arg Leu
 3410 3415 3420

 Leu Leu Glu Ala Ser Trp Glu Ala Met Glu Asp Ala Gly Val Asp Pro
 3425 3430 3435 3440

 Leu Ser Leu Lys Gly Asn Asp Val Gly Val Phe Thr Gly Met Phe Gly
 3445 3450 3455

 Gln Gly Tyr Val Ala Pro Gly Asp Ser Val Val Thr Pro Glu Leu Glu
 3460 3465 3470

 Gly Phe Ala Gly Thr Gly Gly Ser Ser Ser Val Ala Ser Gly Arg Val
 3475 3480 3485

 Ser Tyr Val Phe Gly Phe Glu Gly Pro Ala Val Thr Ile Asp Ser Ala
 3490 3495 3500

 Cys Ser Ser Ser Leu Val Ala Met His Leu Ala Ala Gln Ser Leu Arg
 3505 3510 3515 3520

 Gln Gly Glu Cys Ser Met Ala Leu Ala Gly Gly Ala Thr Val Met Ala
 3525 3530 3535

 Asn Pro Gly Ala Phe Val Glu Phe Ser Arg Gln Arg Gly Leu Ala Val
 3540 3545 3550

Asp Gly Arg Cys Lys Ala Phe Ala Ala Ala Asp Gly Thr Gly Trp
 3555 3560 3565

 Ala Glu Gly Val Gly Val Val Ile Leu Glu Arg Leu Ser Val Ala Arg
 3570 3575 3580

 Glu Arg Gly His Arg Ile Leu Ala Val Leu Arg Gly Ser Ala Val Asn
 3585 3590 3595 3600

 Gln Asp Gly Ala Ser Asn Gly Leu Thr Ala Pro Asn Gly Pro Ser Gln
 3605 3610 3615

 Gln Arg Val Ile Arg Arg Ala Leu Val Ser Ala Gly Leu Ala Pro Ser
 3620 3625 3630

 Asp Val Asp Val Val Glu Ala His Gly Thr Gly Thr Thr Leu Gly Asp
 3635 3640 3645

 Pro Ile Glu Ala Gln Ala Leu Leu Ala Thr Tyr Gly Lys Asp Arg Glu
 3650 3655 3660

 Ser Pro Leu Trp Leu Gly Ser Leu Lys Ser Asn Ile Gly His Ala Gln
 3665 3670 3675 3680

 Ala Ala Ala Gly Val Ala Gly Val Ile Lys Met Val Gln Ala Leu Arg
 3685 3690 3695

 His Glu Val Leu Pro Pro Thr Leu His Val Asp Arg Pro Thr Pro Glu
 3700 3705 3710

 Val Asp Trp Ser Ala Gly Ala Val Glu Leu Leu Thr Glu Ala Arg Glu
 3715 3720 3725

 Trp Pro Arg Asn Gly Arg Pro Arg Arg Ala Gly Val Ser Ala Phe Gly
 3730 3735 3740

 Val Ser Gly Thr Asn Ala His Leu Ile Leu Glu Glu Ala Pro Ala Glu
 3745 3750 3755 3760

 Glu Pro Val Pro Thr Pro Glu Val Pro Leu Val Pro Val Val Ser
 3765 3770 3775

 Ala Arg Ser Arg Ala Ser Leu Ala Gly Gln Ala Gly Arg Leu Ala Gly
 3780 3785 3790

 Phe Val Ala Gly Asp Ala Ser Leu Ala Gly Val Ala Arg Ala Leu Val
 3795 3800 3805

 Thr Asn Arg Ala Ala Leu Thr Glu Arg Ala Val Met Val Val Gly Ser
 3810 3815 3820

 Arg Glu Glu Ala Val Thr Asn Leu Glu Ala Leu Ala Arg Gly Glu Asp
 3825 3830 3835 3840

 Pro Ala Ala Val Val Thr Gly Arg Ala Gly Ser Pro Gly Lys Leu Val
 3845 3850 3855

 Trp Val Phe Pro Gly Gln Gly Ser Gln Trp Ile Gly Met Gly Arg Glu
 3860 3865 3870

 Leu Leu Asp Ser Ser Pro Val Phe Ala Glu Arg Val Ala Glu Cys Ala

3875

3880

3885

Ala Ala Leu Glu Pro Trp Ile Asp Trp Ser Leu Leu Asp Val Leu Arg
 3890 3895 3900

Gly Glu Ser Asp Leu Leu Asp Arg Val Asp Val Val Gln Pro Ala Ser
 3905 3910 3915 3920

Phe Ala Met Met Val Gly Leu Ala Ala Val Trp Gln Ser Val Gly Val
 3925 3930 3935

Arg Pro Asp Ala Val Val Gly His Ser Gln Gly Glu Ile Ala Ala Ala
 3940 3945 3950

Cys Val Ser Gly Ala Leu Ser Leu Gln Asp Ala Ala Lys Val Val Ala
 3955 3960 3965

Leu Arg Ser Gln Ala Ile Ala Thr Arg Leu Ala Gly Arg Gly Gly Met
 3970 3975 3980

Ala Ser Val Ala Leu Ser Glu Glu Asp Ala Thr Ala Trp Leu Ala Pro
 3985 3990 3995 4000

Trp Ala Asp Arg Val Gln Val Ala Ala Val Asn Ser Pro Ala Ser Val
 4005 4010 4015

Val Ile Ala Gly Glu Ala Gln Ala Leu Asp Glu Val Val Asp Ala Leu
 4020 4025 4030

Ser Gly Gln Glu Val Arg Val Arg Arg Val Ala Val Asp Tyr Gly Ser
 4035 4040 4045

His Thr Asn Gln Val Glu Ala Ile Glu Asp Leu Leu Ala Glu Thr Leu
 4050 4055 4060

Ala Gly Ile Glu Ala Gln Ala Pro Lys Val Pro Phe Tyr Ser Thr Leu
 4065 4070 4075 4080

Ile Gly Asp Trp Ile Arg Asp Ala Gly Ile Val Asp Gly Gly Tyr Trp
 4085 4090 4095

Tyr Arg Asn Leu Arg Asn Gln Val Gly Phe Gly Pro Ala Val Ala Glu
 4100 4105 4110

Leu Val Arg Gln Gly His Gly Val Phe Val Glu Val Ser Ala His Pro
 4115 4120 4125

Val Leu Val Gln Pro Leu Ser Glu Leu Ser Asp Asp Ala Val Val Thr
 4130 4135 4140

Gly Ser Leu Arg Arg Glu Asp Gly Gly Leu Arg Arg Leu Leu Thr Ser
 4145 4150 4155 4160

Met Ala Glu Leu Tyr Val Gln Gly Val Pro Leu Asp Trp Thr Ala Val
 4165 4170 4175

Leu Pro Arg Thr Gly Arg Val Asp Leu Pro Lys Tyr Ala Phe Asp His
 4180 4185 4190

Arg His Tyr Trp Leu Arg Pro Ala Glu Ser Ala Thr Asp Ala Ala Ser
 4195 4200 4205

Leu Gly Gln Ala Ala Ala Asp His Pro Leu Leu Gly Ala Val Val Glu
 4210 4215 4220

Leu Pro Gln Ser Asp Gly Leu Val Phe Thr Ser Arg Leu Ser Val Arg
 4225 4230 4235 4240

Thr His Pro Trp Leu Ala Asp His Ala Val Gly Gly Val Val Ile Leu
 4245 4250 4255

Pro Gly Ser Gly Leu Ala Glu Leu Ala Val Arg Ala Gly Asp Glu Ala
 4260 4265 4270

Gly Cys Thr Ala Leu Asp Glu Leu Ile Ile Glu Ala Pro Leu Val Val
 4275 4280 4285

Pro Ala Gln Gly Ala Val Arg Val Gln Val Ala Leu Ser Gly Pro Asp
 4290 4295 4300

Glu Thr Gly Ser Arg Thr Val Asp Leu Tyr Ser Gln Arg Asp Gly Gly
 4305 4310 4315 4320

Ala Gly Thr Trp Thr Arg His Ala Thr Gly Val Leu Ser Thr Ala Pro
 4325 4330 4335

Ala Gln Glu Pro Glu Phe Asp Phe His Ala Trp Pro Pro Ala Asp Ala
 4340 4345 4350

Glu Arg Ile Asp Val Glu Thr Phe Tyr Thr Asp Leu Ala Glu Arg Gly
 4355 4360 4365

Tyr Gly Tyr Gly Pro Ala Phe Gln Gly Leu Gln Ala Val Trp Arg Arg
 4370 4375 4380

Asp Gly Asp Val Phe Ala Glu Val Ala Leu Pro Glu Asp Leu Arg Lys
 4385 4390 4395 4400

Asp Ala Gly Arg Phe Gly Val His Pro Ala Leu Leu Asp Ala Ala Leu
 4405 4410 4415

Gln Ala Ala Thr Ala Val Gly Gly Asp Glu Pro Gly Gln Pro Val Leu
 4420 4425 4430

Ala Phe Ala Trp Asn Gly Leu Val Leu His Ala Ala Gly Ala Ser Ala
 4435 4440 4445

Leu Arg Val Arg Leu Ala Pro Ser Gly Pro Asp Thr Leu Ser Val Ala
 4450 4455 4460

Ala Ala Asp Glu Thr Gly Gly Leu Val Leu Thr Met Glu Ser Leu Val
 4465 4470 4475 4480

Ser Arg Pro Val Ser Ala Glu Gln Leu Gly Ala Ala Ala Asp Ala Gly
 4485 4490 4495

His Asp Ala Met Phe Arg Val Asp Trp Thr Glu Leu Pro Ala Val Pro
 4500 4505 4510

Arg Ala Glu Leu Pro Pro Trp Val Arg Ile Asp Thr Ala Asp Asp Val
 4515 4520 4525

Ala Ala Leu Ala Glu Lys Ala Asp Ala Pro Pro Val Val Val Trp Glu
 4530 4535 4540

Ala Ala Gly Gly Asp Pro Ala Leu Ala Val Ser Ser Arg Val Leu Glu
 4545 4550 4555 4560

Ile Met Gln Ala Trp Leu Ala Ala Pro Ala Phe Glu Glu Ala Arg Leu
 4565 4570 4575

Val Val Thr Thr Arg Gly Ala Val Pro Ala Gly Gly Asp His Thr Leu
 4580 4585 4590

Thr Asp Pro Ala Ala Ala Val Trp Gly Leu Val Arg Ser Ala Gln
 4595 4600 4605

Ala Glu His Pro Asp Arg Val Val Leu Leu Asp Thr Asp Gly Glu Val
 4610 4615 4620

Pro Leu Gly Ala Val Leu Ala Ser Gly Glu Pro Gln Leu Ala Val Arg
 4625 4630 4635 4640

Gly Thr Thr Phe Phe Val Pro Arg Leu Ala Arg Ala Thr Arg Leu Ser
 4645 4650 4655

Asp Ala Pro Pro Ala Phe Asp Pro Asp Gly Thr Val Leu Val Ser Gly
 4660 4665 4670

Ala Gly Ser Leu Gly Thr Leu Val Ala Arg His Leu Val Thr Arg His
 4675 4680 4685

Gly Val Arg Arg Val Val Leu Ala Ser Arg Gln Gly Arg Asp Ala Glu
 4690 4695 4700

Gly Ala Gln Asp Leu Ile Thr Glu Leu Thr Gly Glu Gly Ala Asp Val
 4705 4710 4715 4720

Ser Phe Val Ala Cys Asp Val Ser Asp Arg Asp Gln Val Ala Ala Leu
 4725 4730 4735

Leu Ala Gly Leu Pro Asp Leu Thr Gly Val Val His Thr Ala Gly Val
 4740 4745 4750

Phe Glu Asp Gly Val Ile Glu Ala Leu Thr Pro Asp Gln Leu Ala Asn
 4755 4760 4765

Val Tyr Ala Ala Lys Val Thr Ala Ala Met His Leu Asp Glu Leu Thr
 4770 4775 4780

Arg Asp Arg Asp Leu Gly Ala Phe Val Val Phe Ser Ser Val Ala Gly
 4785 4790 4795 4800

Val Met Gly Gly Gly Gln Gly Pro Tyr Ala Ala Asn Ala Phe
 4805 4810 4815

Leu Asp Ala Ala Met Ala Ser Arg Gln Ala Ala Gly Leu Pro Gly Leu
 4820 4825 4830

Ser Leu Ala Trp Gly Leu Trp Glu Arg Ser Ser Gly Met Ala Ala His
 4835 4840 4845

Leu Ser Glu Val Asp His Ala Arg Ala Ser Arg Asn Gly Val Leu Glu

4850

4855

4860

Leu Thr Arg Ala Glu Gly Leu Ala Leu Phe Asp Leu Gly Leu Arg Met
 4865 4870 4875 4880

Ala Glu Ser Leu Leu Val Pro Ile Lys Leu Asp Leu Ala Ala Met Arg
 4885 4890 4895

Ala Ser Thr Val Pro Val Leu Phe Arg Gly Leu Val Arg Pro Ser Arg
 4900 4905 4910

Thr Gln Ala Arg Thr Ala Ser Thr Val Asp Arg Gly Leu Ala Gly Arg
 4915 4920 4925

Leu Ala Gly Leu Pro Val Ala Glu Arg Ala Ala Val Leu Val Asp Leu
 4930 4935 4940

Val Arg Gly Gln Val Ala Val Val Leu Gly Tyr Asp Gly Pro Glu Ala
 4945 4950 4955 4960

Val Arg Pro Asp Thr Ala Phe Lys Asp Thr Gly Phe Asp Ser Leu Thr
 4965 4970 4975

Ser Val Glu Leu Arg Asn Arg Leu Arg Glu Ala Thr Gly Leu Lys Leu
 4980 4985 4990

Pro Ala Thr Leu Val Phe Asp Tyr Pro Asn Pro Leu Ala Val Ala Arg
 4995 5000 5005

Tyr Leu Gly Ala Arg Leu Val Pro Asp Gly Thr Ala Asn Gly Asn Gly
 5010 5015 5020

Asn Gly Asn Gly His Ser Glu Asp Asp Arg Leu Arg His Ala Leu Ala
 5025 5030 5035 5040

Ala Ile Ala Ala Glu Asp Ala Gly Glu Glu Arg Ser Ile Ala Asp Leu
 5045 5050 5055

Gly Val Asp Asp Leu Val Gln Leu Ala Phe Gly Asp Glu
 5060 5065

<210> 6

<211> 1721

<212> PRT

<213> Amycolatopsis mediterranei

<400> 6

Met Ala Cys Arg Leu Pro Gly Gly Val Thr Gly Pro Gly Asp Leu Trp
 1 5 10 15

Arg Leu Val Ala Glu Gly Gly Asp Ala Val Ser Gly Phe Pro Thr Asp
 20 25 30

Arg Cys Trp Asp Leu Asp Thr Leu Phe Asp Pro Asp Pro Asp His Ala
 35 40 45

Gly Thr Ser Tyr Thr Asp Gln Gly Gly Phe Leu His Asp Ala Ala Leu
 50 55 60

Phe Asp Pro Gly Phe Phe Gly Ile Ser Pro Arg Glu Ala Leu Ala Met

65	70	75	80
Asp Pro Gln Gln Arg Leu Leu Leu Glu Ala Ser Trp Glu Ala Leu Glu			
85		90	95
Gly Val Gly Leu Asp Pro Ala Ser Leu Gln Gly Thr Asp Val Gly Val			
100		105	110
Phe Thr Gly Ala Gly Gly Ser Gly Tyr Gly Gly Leu Thr Gly Pro			
115		120	125
Glu Met Gln Ser Phe Ala Gly Thr Gly Leu Ala Ser Ser Val Ala Ser			
130		135	140
Gly Arg Val Ser Tyr Val Phe Gly Phe Glu Gly Pro Ala Val Thr Ile			
145		150	155
Asp Thr Ala Cys Ser Ser Ser Leu Val Ala Met His Leu Ala Ala Gln			
165		170	175
Ala Leu Arg Gln Gly Asp Cys Ser Met Ala Leu Ala Gly Gly Ala Met			
180		185	190
Val Met Ser Gly Pro Asp Ser Phe Val Val Phe Ser Arg Gln Arg Gly			
195		200	205
Leu Ala Thr Asp Gly Arg Cys Lys Ala Phe Ala Ser Gly Ala Asp Gly			
210		215	220
Met Val Leu Ala Glu Gly Ile Ser Val Val Val Leu Glu Arg Leu Ser			
225		230	235
240			
Val Ala Arg Glu Arg Gly His Arg Val Leu Ala Val Leu Arg Gly Ser			
245		250	255
Ala Val Asn Gln Asp Gly Ala Ser Asn Gly Leu Thr Ala Pro Asn Gly			
260		265	270
Pro Ser Gln Gln Arg Val Ile Arg Ala Ala Leu Ala Asn Ala Gly Ile			
275		280	285
Gly Pro Ser Asp Val Asp Leu Val Glu Ala His Gly Thr Gly Thr Ser			
290		295	300
Leu Gly Asp Pro Ile Glu Ala Gln Ala Leu Leu Ala Thr Tyr Gly Gln			
305		310	315
320			
Asp Arg Glu Thr Pro Leu Trp Leu Gly Ser Leu Lys Ser Asn Ile Gly			
325		330	335
His Thr Gln Ala Ala Ala Gly Val Ala Ser Val Ile Lys Val Val Gln			
340		345	350
Ala Leu Arg His Gly Val Met Pro Pro Thr Leu His Val Asp Glu Pro			
355		360	365
Ser Ser Gln Val Asp Trp Ser Glu Gly Ala Val Glu Leu Leu Thr Gly			
370		375	380
Ser Arg Asp Trp Pro Arg Gly Asp Arg Pro Arg Arg Ala Gly Val Ser			
385		390	395
400			

Ala Gly Ile Thr Ala Gln Ala Pro Asp Val Pro Phe Arg Ser Thr Val
 725 730 735
 Thr Gly Gly Trp Val Arg Asp Ala Asp Val Leu Asp Gly Gly Tyr Trp
 740 745 750
 Tyr Arg Asn Leu Arg Asn Gln Val Arg Phe Gly Pro Ala Val Ala Glu
 755 760 765
 Leu Leu Glu Gln Gly His Gly Val Phe Val Glu Val Ser Ala His Pro
 770 775 780
 Val Leu Val Gln Pro Ile Ser Glu Leu Thr Asp Ala Val Val Thr Gly
 785 790 795 800
 Thr Leu Arg Arg Asp Asp Gly Gly Leu Arg Arg Leu Leu Thr Ser Met
 805 810 815
 Ala Glu Leu Phe Val Arg Gly Val Arg Val Asp Trp Ala Thr Leu Val
 820 825 830
 Pro Pro Ala Arg Val Asp Leu Pro Thr Tyr Ala Phe Asp His Gln His
 835 840 845
 Phe Trp Leu Arg Pro Ala Ala Gln Ala Asp Ala Val Ser Leu Gly Gln
 850 855 860
 Ala Ala Ala Glu His Pro Leu Leu Gly Ala Val Val Arg Leu Pro Gln
 865 870 875 880
 Ser Asp Gly Leu Val Phe Thr Ser Arg Leu Ser Leu Arg Thr His Pro
 885 890 895
 Trp Leu Ala Asp His Thr Ile Gly Gly Val Val Leu Phe Pro Gly Thr
 900 905 910
 Gly Leu Val Glu Leu Ala Val Arg Ala Gly Asp Glu Ala Gly Cys Pro
 915 920 925
 Val Leu Asp Glu Leu Val Thr Glu Ala Pro Leu Val Val Pro Gly Gln
 930 935 940
 Gly Gly Val Asn Val Gln Val Thr Val Ser Gly Pro Asp Gln Asn Gly
 945 950 955 960
 Leu Arg Thr Val Asp Ile His Ser Gln Arg Asp Asp Val Trp Thr Arg
 965 970 975
 His Ala Thr Gly Thr Val Ser Ala Thr Pro Ala Ser Ser Pro Gly Phe
 980 985 990
 Asp Phe Thr Ala Trp Pro Pro Asp Gly Gln Arg Val Glu Ile Gly
 995 1000 1005
 Asp Phe Tyr Ala Asp Leu Ala Glu Arg Gly Tyr Ala Tyr Gly Pro Leu
 1010 1015 1020
 Phe Gln Gly Val Arg Ala Val Trp Gln Arg Gly Glu Asp Val Phe Ala
 1025 1030 1035 1040
 Glu Val Ala Leu Pro Glu Asp Arg Arg Glu Asp Ala Ala Arg Phe Gly

1045

1050

1055

Leu His Pro Ala Leu Leu Asp Ala Ala Leu Gln Thr Gly Thr Ile Ala
 1060 1065 1070

Ala Ala Ala Ser Gly Gln Pro Gly Lys Ser Val Met Pro Phe Ser Trp
 1075 1080 1085

Asn Arg Leu Ala Leu His Ala Val Gly Ala Ala Gly Leu Arg Val Arg
 1090 1095 1100

Val Ala Pro Gly Gly Pro Asp Ala Leu Thr Val Glu Ala Ala Asp Glu
 1105 1110 1115 1120

Thr Gly Ala Pro Val Leu Thr Met Asp Ser Leu Ile Leu Arg Glu Val
 1125 1130 1135

Ala Leu Asp Gln Leu Asp Thr Ala Arg Ala Gly Ser Leu Tyr Arg Val
 1140 1145 1150

Asp Trp Thr Pro Leu Pro Thr Val Asp Ser Ala Val Pro Ala Gly Arg
 1155 1160 1165

Ala Glu Val Leu Glu Ala Phe Gly Glu Glu Pro Leu Asp Leu Thr Gly
 1170 1175 1180

Arg Val Leu Ala Ala Leu Gln Ala Trp Leu Ser Asp Ala Ala Glu Glu
 1185 1190 1195 1200

Ala Arg Leu Val Val Val Thr Arg Gly Ala Val Pro Ala Gly Asp Gly
 1205 1210 1215

Val Val Ser Asp Pro Ala Gly Ala Ala Val Trp Gly Leu Val Arg Ala
 1220 1225 1230

Ala Gln Ala Glu Asn Pro Asp Arg Phe Val Leu Leu Asp Thr Asp Gly
 1235 1240 1245

Glu Val Pro Leu Glu Ala Val Leu Ala Thr Gly Glu Pro Gln Leu Ala
 1250 1255 1260

Leu Arg Gly Thr Thr Phe Ser Val Pro Arg Leu Ala Arg Val Thr Glu
 1265 1270 1275 1280

Pro Ala Glu Ala Pro Leu Thr Phe Arg Pro Asp Gly Thr Val Leu Val
 1285 1290 1295

Ser Gly Ala Gly Thr Leu Gly Ala Leu Ala Ala Arg Asp Leu Val Thr
 1300 1305 1310

Arg His Gly Val Arg Arg Leu Val Leu Ala Ser Arg Arg Gly Arg Ala
 1315 1320 1325

Ala Glu Gly Ile Asp Asp Leu Val Ala Glu Leu Thr Gly His Gly Ala
 1330 1335 1340

Glu Val Thr Val Ala Ala Cys Asp Val Ser Asp Arg Asp Gln Val Ala
 1345 1350 1355 1360

Ala Leu Leu Lys Glu His Ala Leu Thr Ala Val Val His Thr Ala Gly
 1365 1370 1375

Val Phe Asp Ala Gly Val Thr Gly Ala Leu Thr Arg Glu Arg Leu Ala
 1380 1385 1390

 Lys Val Phe Ala Pro Lys Val Asp Ala Ala Asn His Leu Asp Glu Leu
 1395 1400 1405

 Thr Arg Asp Leu Asp Leu Asp Ala Phe Ile Val Tyr Ser Ser Ala Ser
 1410 1415 1420

 Ser Ile Phe Met Gly Ala Gly Ser Gly Gly Tyr Ala Ala Ala Asn Ala
 1425 1430 1435 1440

 Tyr Leu Asp Gly Leu Met Ala Ala Arg Arg Ala Ala Gly Leu Pro Gly
 1445 1450 1455

 Leu Ser Leu Ala Trp Gly Pro Trp Glu Gln Leu Thr Gly Met Ala Asp
 1460 1465 1470

 Thr Ile Asp Asp Leu Thr Leu Ala Arg Met Ser Arg Arg Glu Gly Arg
 1475 1480 1485

 Gly Gly Val Arg Ala Leu Gly Ser Ala Asp Gly Met Glu Leu Phe Asp
 1490 1495 1500

 Ala Ala Leu Ala Ala Gly Gln Ala Leu Leu Val Pro Ile Glu Leu Asp
 1505 1510 1515 1520

 Leu Arg Glu Val Arg Ala Asp Ala Ala Gly Gly Gly Thr Val Pro His
 1525 1530 1535

 Leu Leu Arg Gly Leu Val Arg Ala Gly Arg Gln Ala Ala Arg Thr Ala
 1540 1545 1550

 Ala Thr Glu Asp Gly Gly Leu Glu Arg Arg Leu Ala Gly Leu Thr Val
 1555 1560 1565

 Ala Glu Gln Glu Ala Leu Leu Asp Leu Val Arg Gly Gln Val Ala
 1570 1575 1580

 Val Val Leu Gly His Ala Asp Ser Ser Gly Val Arg Ala Asp Ala Ala
 1585 1590 1595 1600

 Phe Lys Asp Ala Gly Phe Asp Ser Leu Thr Ser Val Glu Leu Arg Asn
 1605 1610 1615

 Arg Leu Arg Glu Thr Thr Gly Leu Lys Leu Pro Ala Thr Leu Val Phe
 1620 1625 1630

 Asp His Pro Asn Pro Leu Ala Leu Ala Arg His Leu Arg Ala Glu Leu
 1635 1640 1645

 Ala Val Asp Glu Ala Ala Ser Pro Ala Asp Ala Val Leu Ala Gly Leu Ala
 1650 1655 1660

 Gly Leu Glu Ala Ala Ile Ala Ala Gly Ala Pro Asp Gly Asp Arg
 1665 1670 1675 1680

 Ile Thr Ala Arg Leu Arg Glu Leu Leu Lys Ala Ala Glu Ala Ala Glu
 1685 1690 1695

Ala Arg Pro Gly Thr Ser Gly Asp Leu Asp Thr Ala Ser Asp Glu Glu
 1700 1705 1710

Leu Phe Ala Leu Val Asp Gly Leu Asp
 1715 1720

<210> 7
 <211> 1688
 <212> PRT
 <213> Amycolatopsis mediterranei

<400> 7
 Met Ala Cys Arg Tyr Pro Gly Gly Val Ser Ser Pro Glu Asp Leu Trp
 1 5 10 15

Arg Leu Val Ala Glu Gly Thr Asp Ala Val Ser Ala Phe Pro Gly Asp
 20 25 30

Arg Gly Trp Asp Val Asp Gly Leu Val Asp Pro Asp Pro Asp Arg Pro
 35 40 45

Gly Thr Thr Tyr Thr Asp Gln Gly Gly Phe Leu His Glu Ala Gly Leu
 50 55 60

Phe Asp Ala Gly Phe Phe Gly Ile Ser Pro Arg Glu Ala Val Ala Met
 65 70 75 80

Asp Pro Gln Gln Arg Leu Leu Leu Glu Thr Ser Trp Glu Ala Ile Glu
 85 90 95

Arg Thr Gly Thr Asp Pro Leu Ser Leu Lys Gly Ser Asp Ile Gly Val
 100 105 110

Phe Thr Gly Val Ala Ser Met Gly Tyr Gly Ala Gly Gly Val Val
 115 120 125

Ala Pro Glu Leu Glu Gly Phe Val Gly Thr Gly Ala Ala Pro Cys Ile
 130 135 140

Ala Ser Gly Arg Val Ser Tyr Val Leu Gly Phe Glu Gly Pro Ala Val
 145 150 155 160

Thr Val Asp Thr Gly Cys Ser Ser Leu Val Ala Met His Leu Ala
 165 170 175

Ala Gln Ala Leu Arg Arg Gly Glu Cys Ser Met Ala Leu Ala Gly Gly
 180 185 190

Ala Met Val Met Ala Gln Pro Gly Ser Phe Val Ser Phe Ser Arg Gln
 195 200 205

Arg Gly Leu Ala Leu Asp Gly Arg Cys Lys Ala Phe Ser Asp Ser Ala
 210 215 220

Asp Gly Met Gly Leu Ala Glu Gly Val Gly Val Ile Ala Leu Glu Arg
 225 230 235 240

Leu Ser Val Ala Arg Glu Arg Gly His Arg Val Leu Ala Val Leu Arg
 245 250 255

Gly Ile Ala Val Asn Gln Asp Gly Ala Ser Asn Gly Leu Thr Ala Pro
 260 265 270
 Asn Gly Pro Ser Gln Gln Arg Val Ile Arg Ala Ala Leu Ala Glu Ala
 275 280 285
 Gly Leu Ser Pro Ser Asp Val Asp Ala Val Glu Gly His Gly Thr Gly
 290 295 300
 Thr Thr Leu Gly Asp Pro Ile Glu Ala Gln Ala Leu Leu Ala Thr Tyr
 305 310 315 320
 Gly Lys Gly Arg Asp Pro Glu Lys Pro Leu Trp Leu Gly Ser Val Lys
 325 330 335
 Ser Asn Leu Gly His Thr Gln Ala Ala Ala Gly Val Ala Ser Val Ile
 340 345 350
 Lys Met Val Gln Ala Leu Arg His Gly Val Leu Pro Pro Thr Leu His
 355 360 365
 Val Asp Arg Pro Ser Thr Glu Val Asp Trp Ser Ala Gly Ala Val Ser
 370 375 380
 Leu Leu Thr Glu Ala Arg Glu Trp Pro Arg Glu Gly Arg Pro Arg Arg
 385 390 395 400
 Ala Gly Val Ser Ser Phe Gly Ile Ser Gly Thr Asn Ala His Leu Ile
 405 410 415
 Leu Glu Glu Ala Pro Glu Glu Glu Pro Pro Val Ala Glu Ala Pro Ser
 420 425 430
 Ala Gly Val Val Pro Val Val Val Ser Ala Arg Gly Ala Leu Ala Gly
 435 440 445
 Gln Ala Gly Arg Leu Ala Ala Phe Leu Glu Ala Ser Asp Glu Pro Leu
 450 455 460
 Val Thr Val Ala Gly Ala Leu Ile Cys Gly Arg Ser Arg Phe Gly Asp
 465 470 475 480
 Arg Ala Val Val Val Ala Gly Thr Arg Ala Glu Ala Thr Ala Gly Leu
 485 490 495
 Ala Ala Leu Ala Arg Gly Glu Ser Ala Ala Asp Val Val Thr Gly Thr
 500 505 510
 Val Ala Ala Ser Gly Val Pro Gly Lys Leu Val Trp Val Phe Pro Gly
 515 520 525
 Gln Gly Ser Gln Trp Val Gly Met Gly Arg Glu Leu Leu Glu Ala Ser
 530 535 540
 Pro Val Phe Ala Ala Arg Ile Ala Glu Cys Ala Ala Ala Leu Glu Pro
 545 550 555 560
 Trp Ile Asp Trp Ser Leu Leu Asp Val Leu Arg Gly Glu Gly Asp Leu
 565 570 575
 Asp Arg Val Asp Val Val Gln Pro Ala Ser Phe Ala Val Met Val Gly

580	585	590
Leu Ala Ala Val Trp Ser Ser Val Gly Val Val Pro Asp Ala Val Leu		
595	600	605
Gly His Ser Gln Gly Glu Ile Ala Ala Ala Cys Val Ser Gly Ala Leu		
610	615	620
Ser Leu Gln Asp Ala Ala Lys Val Val Ala Leu Arg Ser Gln Ala Ile		
625	630	635
Ala Ala Lys Leu Ala Gly Arg Gly Met Ala Ser Val Ala Leu Ser		
645	650	655
Glu Glu Asp Ala Val Ala Arg Leu Arg His Trp Ala Asp Arg Val Glu		
660	665	670
Val Ala Ala Val Asn Ser Pro Ser Ser Val Val Ile Ala Gly Asp Ala		
675	680	685
Glu Ala Leu Asp Gln Ala Leu Glu Ala Leu Thr Gly Gln Asp Ile Arg		
690	695	700
Val Arg Arg Val Ala Val Asp Tyr Ala Ser His Thr Arg His Val Glu		
705	710	715
720		
Asp Ile Gln Glu Pro Leu Ala Glu Ala Leu Ala Gly Ile Glu Ala His		
725	730	735
Ala Pro Thr Leu Pro Phe Phe Ser Thr Leu Thr Gly Asp Trp Ile Arg		
740	745	750
Glu Ala Gly Val Val Asp Gly Gly Tyr Trp Tyr Arg Asn Leu Arg Asn		
755	760	765
Gln Val Gly Phe Gly Pro Ala Val Ala Glu Leu Leu Gly Leu Gly His		
770	775	780
Arg Val Phe Val Glu Val Ser Ala His Pro Val Leu Val Gln Ala Ile		
785	790	795
800		
Ser Ala Ile Ala Asp Asp Thr Asp Ala Val Val Thr Gly Ser Leu Arg		
805	810	815
Arg Glu Glu Gly Gly Leu Arg Arg Leu Leu Thr Ser Met Ala Glu Leu		
820	825	830
Phe Val Arg Gly Val Asp Val Asp Trp Ala Thr Met Val Pro Pro Ala		
835	840	845
Arg Val Asp Leu Pro Thr Tyr Ala Phe Asp His Gln His Tyr Trp Leu		
850	855	860
865		
Arg Tyr Val Glu Thr Ala Thr Asp Ala Ala Gly Pro Val Val Arg Leu		
870	875	880
Pro Gln Thr Gly Gly Leu Val Phe Thr Thr Glu Trp Ser Leu Lys Ser		
885	890	895
Gln Pro Trp Leu Ala Glu His Thr Leu Glu Asp Leu Val Val Val Pro		
900	905	910

Gly Ala Ala Leu Val Glu Leu Ala Val Arg Ala Gly Asp Glu Ala Gly
 915 920 925
 Thr Pro Val Leu Asp Glu Leu Val Ile Glu Thr Pro Leu Val Val Pro
 930 935 940
 Glu Arg Gly Ala Ile Arg Val Gln Val Thr Val Ser Gly Pro Asp Asp
 945 950 955 960
 Gly Thr Arg Thr Leu Glu Val His Ser Gln Pro Glu Asp Ala Thr Asp
 965 970 975
 Glu Trp Thr Arg His Ala Thr Gly Thr Leu Ser Ala Thr Pro Asp Glu
 980 985 990
 Ser Ser Gly Phe Asp Phe Thr Ala Trp Pro Pro Pro Gly Ala Arg Gln
 995 1000 1005
 Leu Asp Gly Val Pro Ala Ile Trp Arg Ala Gly Asp Glu Ile Phe Ala
 1010 1015 1020
 Glu Val Ser Leu Pro Asp Asp Ala Asp Ala Glu Ala Phe Gly Ile His
 1025 1030 1035 1040
 Pro Ala Leu Leu Asp Ala Ala Leu His Pro Ala Leu Pro Gly Asp Asp
 1045 1050 1055
 Gly Leu Thr Gln Pro Met Glu Trp Arg Gly Leu Thr Leu His Ala Ala
 1060 1065 1070
 Gly Ala Ser Thr Leu Arg Val Arg Leu Val Pro Gly Gly Phe Leu Glu
 1075 1080 1085
 Ala Ala Asp Gly Ala Gly Ser Leu Val Val Thr Ala Lys Glu Val Ala
 1090 1095 1100
 Leu Arg Pro Val Thr Ile Ala Arg Ser Arg Thr Thr Thr Arg Asp Ser
 1105 1110 1115 1120
 Leu Phe Gln Leu Asn Trp Ile Glu Leu Pro Glu Ser Gly Val Val Ala
 1125 1130 1135
 Ala Ala Asp Asp Thr Glu Val Leu Glu Val Pro Ala Gly Asp Ser Pro
 1140 1145 1150
 Leu Ala Ala Thr Ser Arg Val Leu Glu Arg Leu Gln Thr Trp Leu Thr
 1155 1160 1165
 Glu Pro Glu Ala Glu Gln Leu Val Val Thr Arg Gly Ala Val Pro
 1170 1175 1180
 Ala Gly Asp Thr Pro Val Thr Asp Pro Ala Ala Ala Val Trp Gly
 1185 1190 1195 1200
 Leu Val Arg Ser Ala Gln Ala Glu Asn Pro Asp Arg Ile Val Leu Leu
 1205 1210 1215
 Asp Thr Asp Gly Glu Val Pro Leu Gly Ala Val Leu Ala Gly Gly Glu
 1220 1225 1230

Pro Gln Val Ala Val Arg Gly Thr Ala Leu Tyr Val Pro Arg Leu Ala
 1235 1240 1245
 Arg Ala Asp Ala Ala Pro Val Ser Gly Leu His Gly Thr Val Leu Val
 1250 1255 1260
 Ser Gly Ala Gly Val Leu Gly Glu Ile Val Ala Arg His Leu Val Thr
 1265 1270 1275 1280
 Arg His Gly Val Arg Lys Leu Val Leu Ala Ser Arg Arg Gly Leu Asp
 1285 1290 1295
 Ala Asp Gly Ala Lys Asp Leu Val Thr Asp Leu Thr Gly Glu Gly Ala
 1300 1305 1310
 Asp Val Ser Val Val Ala Cys Asp Leu Ala Asp Arg Asn Gln Val Ala
 1315 1320 1325
 Ala Leu Leu Ala Asp His Arg Pro Ala Ser Val Ile His Thr Ala Gly
 1330 1335 1340
 Val Leu Asp Asp Gly Val Ile Gly Thr Leu Thr Pro Glu Arg Leu Ala
 1345 1350 1355 1360
 Lys Val Phe Ala Pro Lys Val Asp Ala Val Arg His Leu Asp Glu Leu
 1365 1370 1375
 Thr Arg Asp Leu Asp Leu Asp Ala Phe Val Val Phe Ser Ser Gly Ser
 1380 1385 1390
 Gly Val Phe Gly Ser Pro Gly Gln Gly Asn Tyr Ala Ala Ala Asn Ala
 1395 1400 1405
 Phe Leu Asp Ala Ala Met Ala Ser Arg Arg Ala Ala Gly Leu Pro Gly
 1410 1415 1420
 Leu Ser Leu Ala Trp Gly Leu Trp Glu Gln Ala Thr Gly Met Thr Ala
 1425 1430 1435 1440
 His Leu Gly Gly Thr Asp Gln Ala Arg Met Ser Arg Gly Val Arg
 1445 1450 1455
 Pro Ile Thr Ala Glu Glu Gly Met Ala Leu Phe Asp Thr Ala Leu Gly
 1460 1465 1470
 Ala Gln Pro Ala Leu Leu Val Pro Val Lys Leu Asp Leu Arg Glu Val
 1475 1480 1485
 Arg Ala Gly Gly Ala Val Pro His Leu Leu Arg Gly Leu Val Arg Ala
 1490 1495 1500
 Gly Arg Arg Gln Ala Gln Ala Ala Ser Thr Val Asp Asn Gln Leu Leu
 1505 1510 1515 1520
 Gly Arg Leu Ala Gly Leu Gly Ala Pro Glu Gln Glu Ala Leu Leu Val
 1525 1530 1535
 Asp Leu Val Arg Gly Gln Val Ala Ala Val Leu Gly His Ala Gly Pro
 1540 1545 1550
 Asp Ala Val Arg Ala Asp Thr Ala Phe Lys Asp Ala Gly Phe Asp Ser

1555	1560	1565
Leu Thr Ser Val Asp Leu Arg Asn Arg Leu Arg Glu Ser Thr Gly Leu		
1570	1575	1580
Lys Leu Pro Ala Thr Leu Ala Phe Asp Tyr Pro Thr Pro Leu Val Leu		
1585	1590	1600
Ala Arg His Leu Arg Asp Glu Leu Gly Ala Gly Asp Asp Ala Leu Ser		
1605	1610	1615
Val Val His Ala Arg Leu Glu Asp Val Glu Ala Leu Leu Gly Gly Leu		
1620	1625	1630
Arg Leu Asp Glu Ser Thr Lys Thr Gly Leu Thr Leu Arg Leu Gln Gly		
1635	1640	1645
Leu Val Ala Arg Cys Asn Gly Val Asn Asp Gln Thr Gly Gly Glu Thr		
1650	1655	1660
Leu Ala Asp Arg Leu Glu Ala Ala Ser Ala Asp Glu Val Leu Asp Phe		
1665	1670	1680
Ile Asp Glu Glu Leu Gly Leu Thr		
1685		
<210> 8		
<211> 3413		
<212> PRT		
<213> Amycolatopsis mediterranei		
<400> 8		
Met Ala Thr Asp Glu Lys Leu Leu Lys Tyr Leu Lys Arg Val Thr Ala		
1	5	10
15		
Glu Leu His Ser Leu Arg Lys Gln Gly Ala Arg His Ala Asp Glu Pro		
20	25	30
Leu Ala Val Val Gly Met Ala Cys Arg Phe Pro Gly Gly Val Ser Ser		
35	40	45
Pro Glu Asp Leu Trp Gln Leu Val Ala Gly Gly Val Asp Ala Leu Ser		
50	55	60
Asp Phe Pro Asp Asp Arg Gly Trp Glu Leu Asp Gly Leu Phe Asp Pro		
65	70	75
80		
Asp Pro Asp His Pro Gly Thr Ser Tyr Thr Ser Gln Gly Gly Phe Leu		
85	90	95
Arg Gly Ala Gly Leu Phe Asp Ala Gly Leu Phe Gly Ile Ser Pro Arg		
100	105	110
Glu Ala Leu Val Met Asp Pro Gln Gln Arg Val Leu Leu Glu Thr Ser		
115	120	125
Trp Glu Ala Leu Glu Asp Ala Gly Val Asp Pro Leu Ser Leu Lys Gly		
130	135	140
Ser Asp Val Gly Val Phe Ser Gly Val Phe Thr Gln Gly Tyr Gly Ala		

145	150	155	160
Gly Ala Ile Thr Pro Asp Leu Glu Ala Phe Ala Gly Ile Gly Ala Ala			
165	170	175	
Ser Ser Val Ala Ser Gly Arg Val Ser Tyr Val Phe Gly Leu Glu Gly			
180	185	190	
Pro Ala Val Thr Ile Asp Thr Ala Cys Ser Ser Ser Leu Val Ala Ile			
195	200	205	
His Leu Ala Ala Gln Ala Leu Arg Ala Gly Glu Cys Ser Met Ala Leu			
210	215	220	
Ala Gly Gly Ala Thr Val Met Pro Thr Pro Gly Thr Phe Val Ala Phe			
225	230	235	240
Ser Arg Gln Arg Val Leu Ala Ala Asp Gly Arg Ser Lys Ala Phe Ser			
245	250	255	
Ser Thr Ala Asp Gly Thr Gly Trp Ala Glu Gly Ala Gly Val Leu Val			
260	265	270	
Leu Glu Arg Leu Ser Val Ala Gln Glu Arg Gly His Arg Ile Leu Ala			
275	280	285	
Val Leu Arg Gly Ser Ala Val Asn Gln Asp Gly Ala Ser Asn Gly Leu			
290	295	300	
Thr Ala Pro Asn Gly Pro Ser Gln Gln Arg Val Ile Arg Lys Ala Leu			
305	310	315	320
Ala Gly Ala Gly Leu Val Ala Ser Asp Val Asp Val Val Glu Ala His			
325	330	335	
Gly Thr Gly Thr Ala Leu Gly Asp Pro Ile Glu Ala Gln Ala Leu Leu			
340	345	350	
Ala Thr Tyr Gly Gln Gly Arg Glu Arg Pro Leu Trp Leu Gly Ser Val			
355	360	365	
Lys Ser Asn Phe Gly His Thr Gln Ala Ala Ala Gly Val Ala Gly Val			
370	375	380	
Ile Lys Met Val Gln Ala Leu Arg His Gly Ala Met Pro Pro Thr Leu			
385	390	395	400
His Val Ala Glu Pro Thr Pro Glu Val Asp Trp Ser Ala Gly Ala Val			
405	410	415	
Glu Leu Leu Thr Glu Pro Arg Glu Trp Pro Ala Gly Asp Arg Pro Arg			
420	425	430	
Arg Ala Gly Val Ser Ala Phe Gly Ile Ser Gly Thr Asn Ala His Leu			
435	440	445	
Ile Leu Glu Glu Ala Pro Pro Ala Asp Ala Val Ala Glu Glu Pro Glu			
450	455	460	
Phe Lys Gly Pro Val Pro Leu Val Val Ser Ala Gly Ser Pro Thr Ser			
465	470	475	480

Leu Ala Ala Gln Ala Gly Arg Leu Ala Glu Val Leu Ala Ser Gly Gly
 485 490 495

 Val Ser Arg Ala Arg Leu Ala Ser Gly Leu Leu Ser Gly Arg Ala Leu
 500 505 510

 Leu Gly Asp Arg Ala Val Val Ala Gly Thr Asp Glu Asp Ala Val
 515 520 525

 Ala Gly Leu Arg Ala Leu Ala Arg Gly Asp Arg Ala Pro Gly Val Leu
 530 535 540

 Thr Gly Ser Ala Lys His Gly Lys Val Val Tyr Val Phe Pro Gly Gln
 545 550 555 560

 Gly Ser Gln Arg Leu Gly Met Gly Arg Glu Leu Tyr Asp Arg Tyr Pro
 565 570 575

 Val Phe Ala Thr Ala Phe Asp Glu Ala Cys Glu Gln Leu Asp Val Cys
 580 585 590

 Leu Ala Gly Arg Ala Gly His Arg Val Arg Asp Val Val Leu Gly Glu
 595 600 605

 Val Pro Ala Glu Thr Gly Leu Leu Asn Gln Thr Val Phe Thr Gln Ala
 610 615 620

 Gly Leu Phe Ala Val Glu Ser Ala Leu Phe Arg Leu Ala Glu Ser Trp
 625 630 635 640

 Gly Val Arg Pro Asp Val Val Leu Gly His Ser Ile Gly Glu Ile Thr
 645 650 655

 Ala Ala Tyr Ala Ala Gly Val Phe Ser Leu Pro Asp Ala Ala Arg Ile
 660 665 670

 Val Ala Ala Arg Gly Arg Leu Met Gln Ala Leu Ala Pro Gly Gly Ala
 675 680 685

 Met Val Ala Val Ala Ala Ser Glu Ala Glu Val Ala Glu Leu Leu Gly
 690 695 700

 Asp Gly Val Glu Leu Ala Ala Val Asn Gly Pro Ser Ala Val Val Leu
 705 710 715 720

 Ser Gly Asp Ala Asp Ala Val Val Ala Ala Ala Arg Met Arg Glu
 725 730 735

 Arg Gly His Lys Thr Lys Gln Leu Lys Val Ser His Ala Phe His Ser
 740 745 750

 Ala Arg Met Ala Pro Met Leu Ala Glu Phe Ala Ala Glu Leu Ala Gly
 755 760 765

 Val Thr Trp Arg Glu Pro Glu Ile Pro Val Val Ser Asn Val Thr Gly
 770 775 780

 Arg Phe Ala Glu Pro Gly Glu Leu Thr Glu Pro Gly Tyr Trp Ala Glu
 785 790 795 800

His Val Arg Arg Pro Val Arg Phe Ala Glu Gly Val Ala Ala Ala Thr
 805 810 815

 Glu Ser Gly Gly Ser Leu Phe Val Glu Leu Gly Pro Gly Ala Ala Leu
 820 825 830

 Thr Ala Leu Val Glu Glu Thr Ala Glu Val Thr Cys Val Ala Ala Leu
 835 840 845

 Arg Asp Asp Arg Pro Glu Val Thr Ala Leu Ile Thr Ala Val Ala Glu
 850 855 860

 Leu Phe Val Arg Gly Val Ala Val Asp Trp Pro Ala Leu Leu Pro Pro
 865 870 875 880

 Val Thr Gly Phe Val Asp Leu Pro Lys Tyr Ala Phe Asp Gln Gln His
 885 890 895

 Tyr Trp Leu Gln Pro Ala Ala Gln Ala Thr Asp Ala Ala Ser Leu Gly
 900 905 910

 Gln Val Ala Ala Asp His Pro Leu Leu Gly Ala Val Val Arg Leu Pro
 915 920 925

 Gln Ser Asp Gly Leu Val Phe Thr Ser Arg Leu Ser Leu Lys Ser His
 930 935 940

 Pro Trp Leu Ala Asp His Val Ile Gly Gly Val Val Leu Val Ala Gly
 945 950 955 960

 Thr Gly Leu Val Glu Leu Ala Val Arg Ala Gly Asp Glu Ala Gly Cys
 965 970 975

 Pro Val Leu Glu Glu Leu Val Ile Glu Ala Pro Leu Val Val Pro Asp
 980 985 990

 His Gly Gly Val Arg Ile Gln Val Val Val Gly Ala Pro Gly Glu Thr
 995 1000 1005

 Gly Ser Arg Ala Val Glu Val Tyr Ser Leu Arg Glu Asp Ala Gly Ala
 1010 1015 1020

 Glu Val Trp Ala Arg His Ala Thr Gly Phe Leu Ala Ala Thr Pro Ser
 1025 1030 1035 1040

 Gln His Lys Pro Phe Asp Phe Thr Ala Trp Pro Pro Pro Gly Val Glu
 1045 1050 1055

 Arg Val Asp Val Glu Asp Phe Tyr Asp Gly Leu Val Asp Arg Gly Tyr
 1060 1065 1070

 Ala Tyr Gly Pro Ser Phe Arg Gly Leu Arg Ala Val Trp Arg Arg Gly
 1075 1080 1085

 Asp Glu Val Phe Ala Glu Val Ala Leu Ala Glu Asp Asp Arg Ala Asp
 1090 1095 1100

 Ala Ala Arg Phe Gly Ile His Pro Gly Leu Leu Asp Ala Ala Leu His
 1105 1110 1115 1120

 Ala Gly Met Ala Gly Ala Thr Thr Glu Glu Pro Gly Arg Pro Val

1125

1130

1135

Leu Pro Phe Ala Trp Asn Gly Leu Val Leu His Ala Ala Gly Ala Ser
 1140 1145 1150

Ala Leu Arg Val Arg Leu Ala Pro Ser Gly Pro Asp Ala Leu Ser Val
 1155 1160 1165

Glu Ala Ala Asp Glu Ala Gly Gly Leu Val Val Thr Ala Asp Ser Leu
 1170 1175 1180

Val Ser Arg Pro Val Ser Ala Glu Gln Leu Gly Ala Ala Ala Asn His
 1185 1190 1195 1200

Asp Ala Leu Phe Arg Val Glu Trp Thr Glu Ile Ser Ser Ala Gly Asp
 1205 1210 1215

Val Pro Ala Asp His Val Glu Val Leu Glu Ala Val Gly Glu Asp Pro
 1220 1225 1230

Leu Glu Leu Thr Gly Arg Val Leu Glu Ala Val Gln Thr Trp Leu Ala
 1235 1240 1245

Asp Ala Ala Asp Asp Ala Arg Leu Val Val Val Thr Arg Gly Ala Val
 1250 1255 1260

His Glu Val Thr Asp Pro Ala Gly Ala Ala Val Trp Gly Leu Ile Arg
 1265 1270 1275 1280

Ala Ala Gln Ala Glu Asn Pro Asp Arg Ile Val Leu Leu Asp Thr Asp
 1285 1290 1295

Gly Glu Val Pro Leu Gly Arg Val Leu Ala Thr Gly Glu Pro Gln Thr
 1300 1305 1310

Ala Val Arg Gly Ala Thr Leu Phe Ala Pro Arg Leu Ala Arg Ala Glu
 1315 1320 1325

Ala Ala Glu Ala Pro Ala Val Thr Gly Gly Thr Val Leu Ile Ser Gly
 1330 1335 1340

Ala Gly Ser Leu Gly Ala Leu Thr Ala Arg His Leu Val Ala Arg His
 1345 1350 1355 1360

Gly Val Arg Arg Leu Val Leu Val Ser Arg Arg Gly Pro Asp Ala Asp
 1365 1370 1375

Gly Met Ala Glu Leu Thr Ala Glu Leu Ile Ala Gln Gly Ala Glu Val
 1380 1385 1390

Ala Val Val Ala Cys Asp Leu Ala Asp Arg Asp Gln Val Arg Val Leu
 1395 1400 1405

Leu Ala Glu His Arg Pro Asn Ala Val Val His Thr Ala Gly Val Leu
 1410 1415 1420

Asp Asp Gly Val Phe Glu Ser Leu Thr Arg Glu Arg Leu Ala Lys Val
 1425 1430 1435 1440

Phe Ala Pro Lys Val Thr Ala Ala Asn His Leu Asp Glu Leu Thr Arg
 1445 1450 1455

Glu Leu Asp Leu Arg Ala Phe Val Val Phe Ser Ser Ala Ser Gly Val
 1460 1465 1470

 Phe Gly Ser Ala Gly Gln Gly Asn Tyr Ala Ala Ala Asn Ala Tyr Leu
 1475 1480 1485

 Asp Ala Val Val Ala Asn Arg Arg Ala Ala Gly Leu Pro Gly Thr Ser
 1490 1495 1500

 Leu Ala Trp Gly Leu Trp Glu Gln Thr Asp Gly Met Thr Ala His Leu
 1505 1510 1515 1520

 Gly Asp Ala Asp Gln Ala Arg Ala Ser Arg Gly Gly Val Leu Ala Ile
 1525 1530 1535

 Ser Pro Ala Glu Gly Met Glu Leu Phe Asp Ala Ala Pro Asp Gly Leu
 1540 1545 1550

 Val Val Pro Val Lys Leu Asp Leu Arg Lys Thr Arg Ala Gly Gly Thr
 1555 1560 1565

 Val Pro His Leu Leu Arg Gly Leu Val Arg Pro Gly Arg Gln Gln Ala
 1570 1575 1580

 Arg Pro Ala Ser Thr Val Asp Asn Gly Leu Ala Gly Arg Leu Ala Gly
 1585 1590 1595 1600

 Leu Ala Pro Ala Glu Gln Glu Ala Leu Leu Leu Asp Val Val Arg Thr
 1605 1610 1615

 Gln Val Ala Leu Val Leu Gly His Ala Gly Pro Glu Ala Val Arg Ala
 1620 1625 1630

 Asp Thr Ala Phe Lys Asp Thr Gly Phe Asp Ser Leu Thr Ser Val Glu
 1635 1640 1645

 Leu Arg Asn Arg Leu Arg Glu Ala Ser Gly Leu Lys Leu Pro Ala Thr
 1650 1655 1660

 Leu Val Phe Asp Tyr Pro Thr Pro Val Ala Leu Ala Arg Tyr Leu Arg
 1665 1670 1675 1680

 Asp Glu Leu Gly Asp Thr Val Ala Thr Thr Pro Val Ala Thr Ala Ala
 1685 1690 1695

 Ala Ala Asp Ala Gly Glu Pro Ile Ala Ile Val Gly Met Ala Cys Arg
 1700 1705 1710

 Leu Pro Gly Gly Val Thr Asp Pro Glu Gly Leu Trp Arg Leu Val Arg
 1715 1720 1725

 Asp Gly Leu Glu Gly Leu Ser Pro Phe Pro Glu Asp Arg Gly Trp Asp
 1730 1735 1740

 Leu Glu Asn Leu Phe Asp Asp Pro Asp Arg Ser Gly Thr Thr Tyr
 1745 1750 1755 1760

 Thr Ser Arg Gly Gly Phe Leu Asp Gly Ala Gly Leu Phe Asp Ala Gly
 1765 1770 1775

Phe Phe Gly Ile Ser Pro Arg Glu Ala Leu Ala Met Asp Pro Gln Gln
 1780 1785 1790

Arg Leu Leu Leu Glu Ala Ala Trp Glu Ala Leu Glu Gly Thr Gly Val
 1795 1800 1805

Asp Pro Gly Ser Leu Lys Gly Ala Asp Val Gly Val Phe Ala Gly Val
 1810 1815 1820

Ser Asn Gln Gly Tyr Gly Met Gly Ala Asp Pro Ala Glu Leu Ala Gly
 1825 1830 1835 1840

Tyr Ala Ser Thr Ala Gly Ala Ser Ser Val Val Ser Gly Arg Val Ser
 1845 1850 1855

Tyr Val Phe Gly Phe Glu Gly Pro Ala Val Thr Ile Asp Thr Ala Cys
 1860 1865 1870

Ser Ser Ser Leu Val Ala Met His Leu Ala Gly Gln Ala Leu Arg Gln
 1875 1880 1885

Gly Glu Cys Ser Met Ala Leu Ala Gly Gly Val Thr Val Met Gly Thr
 1890 1895 1900

Pro Gly Thr Phe Val Glu Phe Ala Lys Gln Arg Gly Leu Ala Gly Asp
 1905 1910 1915 1920

Gly Arg Cys Lys Ala Tyr Ala Glu Gly Ala Asp Gly Thr Gly Trp Ala
 1925 1930 1935

Glu Gly Val Gly Val Val Val Leu Glu Arg Leu Ser Val Ala Arg Glu
 1940 1945 1950

Arg Gly His Arg Val Leu Ala Val Leu Arg Gly Ser Ala Val Asn Ser
 1955 1960 1965

Asp Gly Ala Ser Asn Gly Leu Thr Ala Pro Asn Gly Pro Ser Gln Gln
 1970 1975 1980

Arg Val Ile Arg Arg Ala Leu Ala Gly Ala Gly Leu Glu Pro Ser Asp
 1985 1990 1995 2000

Val Asp Ile Val Glu Gly His Gly Thr Gly Thr Ala Leu Gly Asp Pro
 2005 2010 2015

Ile Glu Ala Gln Ala Leu Leu Ala Thr Tyr Gly Lys Asp Arg Asp Pro
 2020 2025 2030

Glu Thr Pro Leu Trp Leu Gly Ser Val Lys Ser Asn Phe Gly His Thr
 2035 2040 2045

Gln Ser Ala Ala Gly Val Ala Gly Val Ile Lys Met Val Gln Ala Leu
 2050 2055 2060

Arg His Gly Val Met Pro Pro Thr Leu His Val Asp Arg Pro Thr Ser
 2065 2070 2075 2080

Gln Val Asp Trp Ser Ala Gly Ala Val Glu Val Leu Thr Glu Ala Arg
 2085 2090 2095

Glu Trp Pro Arg Asn Gly Arg Pro Arg Arg Ala Gly Val Ser Ser Phe

2100	2105	2110
Gly Ile Ser Gly Thr Asn Ala His Leu Ile Ile Glu Glu Ala Pro Ala		
2115	2120	2125
Glu Pro Gln Leu Ala Gly Pro Pro Pro Asp Gly Gly Val Val Pro Leu		
2130	2135	2140
Val Val Ser Ala Arg Ser Pro Gly Ala Leu Ala Gly Gln Ala Arg Arg		
2145	2150	2155
Leu Ala Thr Phe Leu Gly Asp Gly Pro Leu Ser Asp Val Ala Gly Ala		
2165	2170	2175
Leu Thr Ser Arg Ala Leu Phe Gly Glu Arg Ala Val Val Ala Asp		
2180	2185	2190
Ser Ala Glu Glu Ala Arg Ala Gly Leu Gly Ala Leu Ala Arg Gly Glu		
2195	2200	2205
Asp Ala Pro Gly Leu Val Arg Gly Arg Val Pro Ala Ser Gly Leu Pro		
2210	2215	2220
Gly Lys Leu Val Trp Val Phe Pro Gly Gln Gly Thr Gln Trp Val Gly		
2225	2230	2235
Met Gly Arg Glu Leu Leu Glu Glu Ser Pro Val Phe Ala Glu Arg Ile		
2245	2250	2255
Ala Glu Cys Ala Ala Leu Glu Pro Trp Ile Gly Trp Ser Leu Phe		
2260	2265	2270
Asp Val Leu Arg Gly Asp Gly Asp Leu Asp Arg Val Asp Val Leu Gln		
2275	2280	2285
Pro Ala Cys Phe Ala Val Met Val Gly Leu Ala Ala Val Trp Ser Ser		
2290	2295	2300
Ala Gly Val Val Pro Asp Ala Val Leu Gly His Ser Gln Gly Glu Ile		
2305	2310	2315
2320		
Ala Ala Ala Cys Val Ser Gly Ala Leu Ser Leu Glu Asp Ala Ala Lys		
2325	2330	2335
Val Val Ala Leu Arg Ser Gln Ala Ile Ala Ala Lys Leu Ser Gly Arg		
2340	2345	2350
Gly Gly Met Ala Ser Val Ala Leu Gly Glu Ala Asp Val Val Ser Arg		
2355	2360	2365
Leu Ala Asp Gly Val Glu Val Ala Ala Val Asn Gly Pro Ala Ser Val		
2370	2375	2380
Val Ile Ala Gly Asp Ala Gln Ala Leu Asp Glu Thr Leu Glu Ala Leu		
2385	2390	2395
2400		
Ser Gly Ala Gly Ile Arg Ala Arg Arg Val Ala Val Asp Tyr Ala Ser		
2405	2410	2415
His Thr Arg His Val Glu Asp Ile Glu Asp Thr Leu Ala Glu Ala Leu		
2420	2425	2430

Ala Gly Ile Asp Ala Arg Ala Pro Leu Val Pro Phe Leu Ser Thr Leu
 2435 2440 2445
 Thr Gly Glu Trp Ile Arg Asp Glu Gly Val Val Asp Gly Gly Tyr Trp
 2450 2455 2460
 Tyr Arg Asn Leu Arg Gly Arg Val Arg Phe Gly Pro Ala Val Glu Ala
 2465 2470 2475 2480
 Leu Leu Ala Gln Gly His Gly Val Phe Val Glu Leu Ser Ala His Pro
 2485 2490 2495
 Val Leu Val Gln Pro Ile Thr Glu Leu Thr Asp Glu Thr Ala Ala Val
 2500 2505 2510
 Val Thr Gly Ser Leu Arg Arg Asp Asp Gly Gly Leu Arg Arg Leu Leu
 2515 2520 2525
 Thr Ser Met Ala Glu Leu Phe Val Arg Gly Val Glu Val Asp Trp Thr
 2530 2535 2540
 Ser Leu Val Pro Pro Ala Arg Ala Asp Leu Pro Thr Tyr Ala Phe Asp
 2545 2550 2555 2560
 His Glu His Tyr Trp Leu Arg Ala Ala Asp Thr Ala Ser Asp Ala Val
 2565 2570 2575
 Ser Leu Gly Leu Ala Gly Ala Asp His Pro Leu Leu Gly Ala Val Val
 2580 2585 2590
 Gln Leu Pro Gln Ser Asp Gly Leu Val Phe Thr Ser Arg Leu Ser Leu
 2595 2600 2605
 Arg Ser His Pro Trp Leu Ala Asp His Ala Val Arg Asp Val Val Ile
 2610 2615 2620
 Val Pro Gly Thr Gly Leu Val Glu Leu Ala Val Arg Ala Gly Asp Glu
 2625 2630 2635 2640
 Ala Gly Cys Pro Val Leu Asp Glu Leu Val Ile Glu Ala Pro Leu Val
 2645 2650 2655
 Val Pro Arg Arg Gly Gly Val Arg Val Gln Val Ala Leu Gly Gly Pro
 2660 2665 2670
 Ala Asp Asp Gly Ser Arg Thr Val Asp Val Phe Ser Leu Arg Glu Asp
 2675 2680 2685
 Ala Asp Ser Trp Leu Arg His Ala Thr Gly Val Leu Val Pro Glu Asn
 2690 2695 2700
 Arg Pro Arg Gly Thr Ala Ala Phe Asp Phe Ala Ala Trp Pro Pro Pro
 2705 2710 2715 2720
 Glu Ala Lys Pro Val Asp Leu Thr Gly Ala Tyr Asp Val Leu Ala Asp
 2725 2730 2735
 Val Gly Tyr Gly Tyr Gly Pro Thr Phe Arg Ala Val Arg Ala Val Trp
 2740 2745 2750

Arg Arg Gly Ser Gly Asn Thr Thr Glu Thr Phe Ala Glu Ile Ala Leu
 2755 2760 2765
 Pro Glu Asp Ala Arg Ala Glu Ala Gly Arg Phe Gly Ile His Pro Ala
 2770 2775 2780
 Leu Leu Asp Ala Ala Leu His Ser Thr Met Val Ser Ala Ala Asp
 2785 2790 2795 2800
 Thr Glu Ser Tyr Gly Asp Glu Val Arg Leu Pro Phe Ala Trp Asn Gly
 2805 2810 2815
 Leu Arg Leu His Ala Ala Gly Ala Ser Val Leu Arg Val Arg Val Ala
 2820 2825 2830
 Lys Pro Glu Arg Asp Ser Leu Ser Leu Glu Ala Val Asp Glu Ser Gly
 2835 2840 2845
 Gly Leu Val Val Thr Leu Asp Ser Leu Val Gly Arg Pro Val Ser Asn
 2850 2855 2860
 Asp Gln Leu Thr Thr Ala Ala Gly Pro Ala Gly Ala Gly Ser Leu Tyr
 2865 2870 2875 2880
 Arg Val Asp Trp Thr Pro Leu Ser Ser Val Asp Thr Ser Gly Arg Val
 2885 2890 2895
 Pro Ser Trp Leu Pro Val Ala Thr Ala Glu Glu Val Ala Thr Leu Ala
 2900 2905 2910
 Asp Asp Val Leu Thr Gly Ala Thr Glu Ala Pro Ala Val Ala Val Met
 2915 2920 2925
 Glu Ala Val Ala Asp Glu Gly Ser Val Leu Ala Leu Thr Val Arg Val
 2930 2935 2940
 Leu Asp Val Val Gln Cys Trp Leu Ala Gly Gly Leu Glu Gly Thr
 2945 2950 2955 2960
 Lys Leu Ala Ile Val Thr Arg Gly Ala Val Pro Ala Gly Asp Gly Val
 2965 2970 2975
 Val His Asp Pro Ala Ala Ala Val Trp Gly Leu Val Arg Ala Ala
 2980 2985 2990
 Gln Ala Glu Asn Pro Asp Arg Ile Val Leu Leu Asp Val Glu Pro Glu
 2995 3000 3005
 Ala Asp Val Pro Pro Leu Leu Gly Ser Val Leu Ala Asp Gly Glu Pro
 3010 3015 3020
 Gln Val Ala Val Arg Gly Thr Thr Leu Ser Ile Pro Arg Leu Ala Arg
 3025 3030 3035 3040
 Ala Ala Arg Pro Asp Pro Ala Ala Gly Phe Lys Thr Arg Gly Pro Val
 3045 3050 3055
 Leu Val Thr Gly Gly Thr Gly Ser Leu Gly Gly Leu Val Ala Arg His
 3060 3065 3070
 Leu Val Glu Arg His Gly Val Arg Gln Leu Val Leu Ala Ser Arg Arg

3075	3080	3085
Gly Leu Asp Ala Glu Gly Ala Lys Asp Leu Val Thr Asp Leu Thr Ala		
3090	3095	3100
Leu Gly Ala Asp Val Ala Val Ala Ala Cys Asp Val Ala Asp Arg Asp		
3105	3110	3115
Gln Val Ala Ala Leu Leu Thr Glu His Arg Pro Ser Ala Val Val His		
3125	3130	3135
Thr Ala Gly Val Pro Asp Ala Gly Val Ile Gly Thr Val Thr Pro Asp		
3140	3145	3150
Arg Leu Ala Glu Val Phe Ala Pro Lys Val Thr Ala Ala Arg His Leu		
3155	3160	3165
Asp Glu Leu Thr Arg Asp Leu Asp Ser Phe Val Val Tyr Ser		
3170	3175	3180
Ser Val Ser Ala Val Phe Met Gly Ala Gly Ser Gly Ser Tyr Ala Ala		
3185	3190	3195
3200		
Ala Asn Ala Tyr Leu Asp Gly Leu Met Ala His Arg Arg Ala Ala Gly		
3205	3210	3215
Leu Pro Gly Gln Ser Leu Ala Trp Gly Leu Trp Asp Gln Thr Thr Gly		
3220	3225	3230
Gly Met Ala Ala Gly Thr Asp Glu Ala Gly Arg Ala Arg Met Thr Arg		
3235	3240	3245
Arg Gly Gly Leu Val Ala Met Lys Pro Ala Ala Gly Leu Asp Leu Phe		
3250	3255	3260
Asp Ala Ala Ile Gly Ser Gly Glu Pro Leu Leu Val Pro Ala Gln Leu		
3265	3270	3275
3280		
Asp Leu Arg Gly Leu Arg Ala Glu Ala Ala Gly Gly Thr Glu Val Pro		
3285	3290	3295
His Leu Leu Arg Gly Leu Val Arg Ala Gly Arg Gln Gln Ala Arg Ala		
3300	3305	3310
Ala Ser Thr Val Glu Glu Asn Trp Ala Gly Arg Leu Ala Gly Leu Glu		
3315	3320	3325
Pro Ala Glu Arg Gly Gln Val Leu Leu Glu Leu Val Arg Ala Gln Val		
3330	3335	3340
Ala Gly Val Leu Gly Tyr Arg Ala Ala His Gln Val Asp Pro Asp Gln		
3345	3350	3355
3360		
Gly Leu Phe Glu Ile Gly Phe Asp Ser Leu Thr Ala Ile Glu Leu Arg		
3365	3370	3375
Asn Arg Leu Arg Ala Arg Thr Glu Arg Lys Ile Ser Pro Gly Val Val		
3380	3385	3390
Phe Asp His Pro Thr Pro Ala Leu Leu Ala Ala His Leu Asn Glu Leu		
3395	3400	3405

Leu Arg Lys Lys Val
3410

<210> 9
<211> 226
<212> PRT
<213> Amycolata autotrophica

<400> 9
Met Ala Ile Pro Tyr Ser Ser Leu Ala Tyr Glu Leu Arg Asp Ala Val
1 5 10 15

Asn Val Val Asp Leu Asp Glu Asp Asp Val Phe Val Thr Ser Ile Ala
20 25 30

Glu Gly Gln Gly Gly Ala Cys Tyr His Leu Asn Arg Leu Phe His Arg
35 40 45

Leu Leu Thr Glu Leu Gly Tyr Asp Val Thr Pro Leu Ala Gly Ser Thr
50 55 60

Ala Glu Gly Arg Glu Thr Phe Gly Thr Asp Val Glu His Met Phe Asn
65 70 75 80

Leu Val Thr Leu Asp Gly Ala Asp Trp Leu Val Asp Val Gly Tyr Pro
85 90 95

Gly Pro Thr Tyr Val Glu Pro Leu Ala Val Ser Pro Ala Val Gln Thr
100 105 110

Gln Tyr Gly Ser Gln Phe Arg Leu Val Glu Gln Glu Thr Gly Tyr Ala
115 120 125

Leu Gln Arg Arg Gly Ala Val Thr Arg Trp Ser Val Val Tyr Thr Phe
130 135 140

Thr Thr Gln Pro Arg Gln Trp Ser Asp Trp Lys Glu Leu Glu Asp Asn
145 150 155 160

Phe Arg Ala Leu Val Gly Asp Thr Thr Arg Thr Asp Thr Gln Glu Thr
165 170 175

Leu Cys Gly Arg Ala Phe Ala Asn Gly Gln Val Phe Leu Arg Gln Arg
180 185 190

Arg Tyr Leu Thr Val Glu Asn Gly Arg Glu Gln Val Arg Thr Ile Thr
195 200 205

Asp Asp Asp Glu Phe Arg Ala Leu Val Ser Arg Val Leu Ser Gly Asp
210 215 220

His Gly
225